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ROYAL BOTANIC GARDENS, KEW

LIV.—DECADES KEWENSES PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATORUM. DECAS CXV.

1141. **Shorea sericeiflora** *Fischer et Hutch.* [Dipterocarpaceae]; affinis *S. gratissimae* Dyer, sed nervis lateralibus numerosioribus, floribus sericeo-villosis valde majoribus, sepalis fructiferis majoribus differt.

Arbor; ramuli hornotini brevissime pubescentes, annotini glabrescentes. *Folia* ovato-elliptica vel oblongo-lanceolata, basi rotundata vel leviter cuneata, apice acute vel subacute et sensim acuminata, 6·5–12·5 cm. longa, 2·5–5 cm. lata, rigide chartacea, glabra; nervi laterales utrinsecus circiter 16, a costa sub angulo 45 abeuntes, marginem versus arcuati, nervis tertiariis inconspicuis; petioli 1·5–2 cm. longi, tomentelli demum glabri. *Paniculae* terminales, multiflorae, folia superantes; ramuli angulares pubescentes. *Flores* subsessiles, basi articulati; bracteae anguste oblongae, apice rotundatae, 1·3 cm. longae, extra puberulae. *Sepala* ovato-lanceolata, ad apicem obtusum angustata, exteriora basi subcordata, usque ad 1 cm. longa, 3 mm. lata, extra molliter tomentosa, intra glabra. *Petala* sinistrorso-contorta, oblique oblongo-elliptica, obtusa, circiter 1 cm. longa, 0·5 cm. lata, alabastro parte exteriore sericeo-villosa, ceterum glabra. *Stamina* circiter 27, minutissime papillosa, 0·5 cm. longa, apice longe et graciliter setosa; filamenta basi dilatata. *Ovarium* ovoideum, basi glabrum, superne furfuraceum, in stylum inferne furfuraceum superne glabrum angustatum; stigma trilobatum, lobis patulis. *Fructus* ovoideus, 1·5 cm. longus, 1·2 cm. diametro. *Sepala fructifera* 3 exteriora oblongo-linearia, apice rotundata, basi vix angustata, usque ad 13 cm. longa et 1·6 cm. lata, minutissime puberula, 11–12 nervia, 2 interiora usque ad 7·5 cm. longa, acuta.

BURMA. Pegu Circle, *Conservator of Forests* 1954 (type); vernacular name: Kabanthangyin. Tenasserim; Zadi Circle, *Maung Po In* 11692; vernacular name: Thingaubyu.

1142. **Zanthoxylum mazatlanum** *Sandwith* [Rutaceae-Zanthoxyleae]; *Z. ferrugineo* Radlk. costaricensi quam speciei ulli alii affinius, ab eo praesertim foliolis multo paucioribus, floribus minoribus, gynaecio omnino glabro differt.

Arbor, ramulis albo-cinereis glabris rugosis 3 mm. diametro, spinis fortibus numerosis 2–8 mm. longis armata, partibus novellis juventute lana ferruginea decidua praeterea pilis brevibus albis densis persistentibus vestitis. *Folia* juniora glomerata, impari-

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pinnata, 1·5–2·5 cm. longa, adulta non visa; petiolus 0·7–1·5 cm. longus, ut rhachis costae foliolorum et inflorescentia indumento supra descripto indutus; foliola 1–3-juga, lanceolato-elliptica ad ovato-oblonga, obtusa, leviter sinuato-dentata, sinibus glandulas magnas ferentia, utrinque quam aliae partes novellae sparsius adpressiusque pilosa, costa subtus conspicua, 0·5–1 cm. longa, 1–4 mm. lata; rhacheos internodia 2–5 mm. longa. *Inflorescentiae* glomeratae, 1–3·5 cm. longae, compositae; rami corymbis densis 3–12-floribus terminati; pedicelli 2–3 mm. longi. *Flores* dioici, sepalis destituti. *Florum* ♂ *petala* adulta 6–10, linearia, obtusa, apice rubro-fusca et pilosa, inaequalia, pleraque 1 mm. longa, cetera fere dimidio minora; stamina 4–5, cum petalis alternantia, sub ovario rudimentario affixa, filamentis 0·75 mm. longis, antheris circiter 0·8 mm. longis, 1 mm. latis. *Florum* ♀ *petala* eadem atque in floribus staminatis; gynaecium disco sessile, unicarpellatum, glabrum, vix 1 mm. longum, facie nigra punctata, glandulis peltatis brunneis praeditum, cum forma fere obtriangulari, apice truncato et dorsaliter conspicue gibboso; stylus lateralis, glaber, cum stigmate umbilicato-capitato 1 mm. longus.

Mexico. Sinaloa: Mazatlan; Los Zapotes, El Chuelite, 50 m., *Gonzalez Ortega* 5210 (type in Herb. Kew.).

Vernacular Name: Muelilla.

A very distinct plant, with the asepalous flowers of *Z. americanum* and *Z. ferrugineum*, and still further allied to the latter species by its unicarpellate gynaecium and by the curious ferrugineous wool of the young shoots.

1143. **Bursera concinna** *Sandwith* [Burseraceae]; *B. laxiflorae* S. Wats. et *B. filicifoliae* Brandegee affinis, ab ambabus forma numeroque foliolorum, praeterea ab illa inflorescentiis glabris, ab hac foliorum indumento glabrescenti differt.

Arbor parva 4 m. alta, trunco 30 cm. diametro; ramuli 2 mm. diametro, cinereo-fusci, annotini glabri, sulcati, hornotini brevissimi, pubescentes. *Folia* glomerata, imparipinnata, 2–4 cm. longa; petiolus pubescens, 0·7–1 cm. longus; rhachis gracilis, pubescens, leviter alata, internodio infimo fere aptero, internodiis 4–6 mm. longis; foliola 4–5-juga, vulgo 5-juga, rhomboideo-lanceolata vel querciformia, nunc apice obtuse trilobata, nunc parte superiore alte et acute pinnatim incisa, raro etiam ea jugorum inferiorum et praesertim jugi secundi ternata cum petiolulo alato sed folia numquam vere bipinnata, versus summum folium terminali excepto descrescentia, 0·5–1·8 cm. longa, 0·2–1 cm. lata, supra glabra vel in costa inconspicue pubescentia, subtus in costa satis conspicua nervisque lateralibus rete venularum conjunctis pubescentia. *Inflorescentiae* axillares, graciles, glabrae, 2–4 cm. longae, igitur folia aequantes, pedicellos 2–3 alternos gracillimos glabros 4–8 mm. longos emittentes; bracteae conspicuae, lineares vel linearispathulatae, ad 4 mm. longae, saepe persistentes. *Sepala* 4, glabra, cum petalis alternantia et eis dimidio breviora, sub fructu persistentia. *Petala* 4, 2·5 mm. longa. *Stamina* 8, glabra, circiter

1 mm. longa, antheris oblongis. *Ovarium* ovoideum, glabrum, 1·5 mm. longum, stylo stigmatibusque duobus inclusis. *Drupa* bivalvis, ovoidea ad subpyriformis, stylo apiculata, fusca, rugosa, glabra, 7–8 mm. longa. *Pyrena* ovoidea, 6·5 mm. longa, parte superiore nigra et opaca, inferiore arillodio carnoso croceo obtecta.

Mexico. Sinaloa; El Pozole, Ahome, 10 m., *Gonzalez Ortega* 5567 (type in Herb. Kew.): Sonora; Agiabampo, *Palmer* 797 (collected in 1890, distributed as *B. laxiflora* S. Wats.).

Vernacular Name: Torote.

1144. **Echeveria brachyantha** *Sprague* [Crassulaceae]; *E. bifidae* Schlecht. necnon *E. pumilae* Van Houtte similis, ab hac inflorescentia furcata, ab ambabus foliis apiculatis tantum nec mucronatis, floribus multo minoribus.

Caulis simplex, circiter 15 cm. longus et 6 mm. diametro, ut folia scapusque glaucus; internodia inferiora circiter 1·5 cm. longa, superiora sensim abbreviata, foliis rosulam terminalem efformantibus. *Folia* arcuato-ascendentia, spathulato-oblanceolata, brevissime apiculata, 3–4 cm. longa, 1–1·4 cm. lata, 5–6 mm. crassa, supra leviter concava vel plana, subtus late convexa. *Scapus* axillaris in toto circiter 28 cm. longus; pedunculus basi 4 mm. diametro, apice vix 2·5 mm. diametro, inferne viridiusculus, ceterum rubescens; bracteae parvae; bractea infima 1 cm. longa, 4 mm. lata, circiter 5 cm. supra basin inserta. *Cymus* terminalis, bifurcatus; rami arcuati, 6–7·5 cm. longi, floribus modo scorpioideo dispositis, ramo altero 9-floro, altero 6-floro; bracteae oblongae, acutae, basi breviter sagittatae, 6–7 (–11) mm. longae, 2·5 (–4) mm. latae; pedicelli sub anthesi circiter 7 mm., sub fructu circiter 10 mm. longi, inferiores tamen 4–6 mm. longi tantum. *Flores* pentameri, circiter 6 mm. longi et 11 mm. diametro. *Calyx* glaucus, basi late truncatus vel excavato-truncatus; lobi usque ad 0·5 mm. supra basin sejuncti, ovato-oblongi, obtusi, 4–5 mm. longi, 2·5–3 mm. lati. *Corolla* carnea, breviter campanulata; tubus 2 mm. longus; lobi ovato-oblongi arcuato-recurvi, 5·5 mm. longi, vix 3·5 mm. lati, sub lente flavidi, dense roseo-maculati, itaque sub oculo nudo carnei. *Stamina* 10; stamina oppositisepala intra sinus affixa, 3 mm. longa; filamenta 1·5 mm. longa, a basi 0·8 mm. lata ad apicem 0·2 mm. latum sensim angustata; antherae oblongo-lineares, apiculatae, 1·75 mm. longae; stamina oppositipetala 3 mm. supra basin affixa; filamenta circiter 1 mm. longa, basi 0·5–0·6 mm. lata; antherae 1·5 mm. longae. *Glandulae extracarpellares* flavae, semilunatae, margine superiori recto, inferiori curvato, 1·5–2 mm. latae, 0·3 mm. altae. *Carpella* 5; ovaria trigona extrorsum convexa, ovato-oblonga ab interiore visa, vix 4 mm. longa, 1·8 mm. lata, 1·7 mm. crassa; stylus circiter 1·5 mm. longus; ovula numerosissima, multiseriata.

Described from a living specimen cultivated by Mr. N. E. Brown. Native country unknown, possibly Mexico, as it is evidently related to a group of Mexican species represented by

E. bifida, *E. pumila* and *E. secunda*. The possibility of a hydrid origin, however, cannot be excluded.

1145. **Sedum tillaeoides** *Duthie* in Rep. Bot. Gard. Saharanpur, 1884–5, 32 (1885), nomen; Gard. Chron. 1886, n.s. xxv. 299, nomen; Strachey, Cat. Pl. Kumaon, ed. Duthie, 64 (1906), nomen; [Crassulaceae]; S. *perpusillo* Hook. f. & Thoms. affinis, foliis longioribus, sepalis latioribus infera basim prolongatis, petalis et filamentis angustioribus, seminibus numerosioribus minoribus differt. Descriptio C. E. C. Fischer confecta.

Herba parva, ramosa. *Folia* alterna, sessilia, supra basim affixa, lineara vel anguste oblongo-lanceolata, 1·2 cm. longa, ad apicem obtusum angustata, glabra, parte libera basalis vix angustata rotundata vel truncata, nervis paucis obscuris, marginibus integris. *Flores* ramulos terminantes, circiter 3·5 mm. longi. *Pedicelli* 1–2 mm. longi. *Sepala* supra basim affixa, 5, ovato-lanceolata, in lobum brevem rotundatum producta, 3·5–4 mm. longa, obtusa, glabra, viridia. *Petala* 5, unguiculata, lanceolata, sepalis circiter quadrante minora, obtusa, superne hyalina, ungue lato in basim dilatato brunnescente. *Squamae hypogynae* ut videtur nullae. *Stamina* 8, 2–2·5 mm. longa; filamenta gracilia, filiformia, hyalina; antherae parvae, cordato-rotundatae, luteae. *Gynaecium* e carpellis 5 inferne connatis constans; ovaria latere visa late ovato-oblonga, apice rotundata; styli breves, crassiusculi; stigmata minute lobata. *Fructus* e folliculis 5 constans; folliculi apice rotundati, stylis persistentibus coronati. *Semina* pro folliculo circiter 10, suboblonga, apicem versus leviter sensim angustata, minutissime muricata, haud 1 mm. longa.

India. Garhwal, Kalajowar, 15000 ft., *R. Strachey* and *J. E. Winterbottom* 5; Kumaon, Nipchang Valley, 13000–14000 ft., 31 Aug. 1884, *J. F. Duthie* 2920 (type).

The plant found by Strachey and Winterbottom between the years 1846 and 1849 in Garhwal (represented by 3 fragments in the Kew Herbarium) was cited in the Journ. Linn. Soc. Bot. ii, 103: 1858, under *S. perpusillum* Hook. f. & Thoms., which was based primarily on specimens collected by Sir J. D. Hooker in Sikkim. But C. B. Clarke in the Fl. Brit. Ind. ii, 442; 1878, remarked of the first mentioned plant, "The specimen referred here by H. f. & T. collected in the Western Himalaya has different seeds; it is in too imperfect a state for identification." In 1884 Duthie found a *Sedum* in a neighbouring locality which he named as quoted above but, unfortunately, he did not carry out his intention of publishing a description. I have no doubt of the identity of Duthie's plant with that of Strachey and Winterbottom, both from the Western Himalayas, nor of its being quite distinct from Hooker's species from the Eastern Himalayas.

1146. **Rumfordia spectabilis** *Sandwith* [Compositae-Helianthoideae]; *R. floribundae* DC. affinis, omnibus partibus suis majoribus vel numerosioribus, praesertim bracteis squamisque involucri exterioribus non obovatis plerumque plusduplo majoribus differt.

Herba verisimillime elata, speciosa, caule sub panicula sublignoso glabro 4 mm. diametro. *Folia* opposita, glabra, late rhomboideo-ovata, acuminata, leviter dentata, cum forma omnino eadem ac in *R. floribunda*, sed majora, ea ramos paniculae infimos subtendentia 25 cm. longa, 13–14 cm. lata, superiora minora et in bracteas decrescentia, ut in *R. floribunda* abrupte velut in petiolum contracta, deinde cuneata et basi distincte connata, 8 cm. supra basim conspicue trinervia. *Panicula* ovoidea, 12–20 cm. diametro, composita, multicapitulata oppositiramea, ramis dense glanduloso-pubescentibus; bracteae numerosae, conspicuae, glandulosae, primariae foliaceae, secundariae ellipticae vel ovato-lanceolatae, 1–2 cm. longae, 3–8 mm. latae, internodia ramorum pedicellosque saepe aequantes. *Capitula* speciosa, ad 4·5 cm. diametro, pedicellos 1–2·8 cm. longos terminantia. *Involucri* squamae exteriores 5, utrinque glandulosae, ovato-ellipticae vel ovato-spathulatae, obtusae vel fere acutae neque ut in *R. floribunda* obovatae, striato-venosae, integrae, 1–1·6 cm. longae, 4–9 mm. latae; squamae interiores cucullato-cymbiformes, acutiusculae, dorso glanduloso-scaberrimae, 4–5 mm. longae. *Flores disci* ad 25, tubo glanduloso-pubescenti 2 mm. longo, faucibus 4–5 mm. longis. *Flores* ♀ 7–10; tubus glanduloso-pubescens 2·5 mm. longus; ligula late elliptica, siccitate candidissima, striato-venosa, 1·6–1·8 cm. longa, 10–12 mm. lata, apice obtuse breviterque tridentata. *Achaenia* ut in *R. floribunda*.

Mexico. Sinaloa; Rio Los Carrizos, 1940 m., *Gonzalez Ortega* 966 (type in Herb. Kew.).

Vernacular name: Tacote.

Though the characters which separate this on paper from *R. floribunda* are mainly those of degree, they are so numerous and so considerable that the plant is distinguished at a glance from a large and uniform series of the common species, and seems to deserve nothing less than specific rank.

1147. **Polycline Haareri** *Dandy* [Compositae]; ob folia sessilia, lanceolato-ovata, grosse obtuseque dentata, e basi 3-nervia, facile distinguenda.

Herba ad 30 cm. alta, glaberrima, basi lignosa, parce ramosa, ramis erectis subteretibus sed leviter crebreque costatis. *Folia* sessilia, lanceolato-ovata, grosse dentata, dentibus obtusis utrinsecus 3–6, superiora fere integra, basi late cuneata obtusa, apice obtusa, membranacea, concoloria, e basi 3-nervia, 2–2·5 cm. longa et 1–1·4 cm. lata, superiora minora. *Glomeruli* 20–30-capitulati, 1·3–1·5 cm. diametro, pedunculati, pedunculis 2–4 cm. longis leviter costatis; receptaculum commune conicum. *Capitula* circiter 15–20-flora, globosa; receptaculum verum subulatum; capitulorum exteriorum bracteae ad 5 mm., eaedem capitulorum caeterorum et receptaculi paleae circiter 3·5 mm. longae, omnes concavae, oblongae, obtusae, hyalinae, 1-nerviae, apicem versus breviter fimbriatae. *Corolla* alba, 2–2·5 mm. longa, regulariter

5-loba, lobis triangularibus acutis recurvis, tubo superne dilatato. *Antherae* circiter 1·4 mm. longae, basi caudatae. *Achaenia* nigra, obovoideo-oblonga, leviter compressa, basi brevissime stipitata, circiter 1 mm. longa, minute verruculosa et sparse brevissimeque pilosula.

TROPICAL AFRICA. Tanganyika Territory: Doinyo Sambu, Arusha, approximately 1800 m. alt., Feb., *Haarer* B 150.

1148. **Petrocosmea Parryorum** *C. E. C. Fischer* [Gesneraceae-Cyrtandreae]; *P. grandiflorae* Hemsl. affinis, foliis peltatis, floribus minoribus differt.

Herba parva, primo dense sericeo-hirsuta. *Cormus* radiculis fibrosis provisus. *Folia* rosulata, primo subcarnosa et bullata, tandema membranacea planaque, peltata, variabilia, ad 6 cm. longa, limbo orbiculari paullo oblato anguste vel lato elliptico ad 3 cm. lato apice rotundato vel rarius subacuto basi rotundato subpalmate nervoso supra penninervio, costa lata nervis secundariis obscuris primo praecipue subtus dense hirsuto, tandem hirtis albis crispis utrinque sparse tecto, supra primo papilloso siccitate areolato, integro repando vel paullo sinuato-dentato, margine ciliato. *Petioli* pedunculi pedicilli calycesque ut folia hirti. *Pedunculi* 1-pauciflori ex apice cormi, foliis in flore aequantes, in fructu superantes. *Flores* solitarii vel in umbellis simplicibus compositisve collecti. *Pedicelli* in flore 1–2 cm. longi apice bractea lineari vel lineari-lanceolata calyce breviore provisi. *Calyx* profunde 5-fidus, laciniis aequalibus lanceolatis acutis. *Corolla* late campanulata, intense coerulea, delicate venosa, intus pubescens, extus glaber, 1·3–1·5 cm. diametro tubo brevi; labium anticum 3-lobum lobis latis rotundatis; posticum 2-lobum lobis angustioribus muticis. *Discus* 0. *Stamina* 2, inclusa, filamentis crassis geniculatis apice incrassatis rufo-villosis basi glabris 1·5–2 mm. longis. *Antherae* ovato-cordatae, apice conniventes, 3 mm. longae. *Staminodia* 2 ligulata minuta. *Ovarium* albo-villosum. *Stylus* ovario longior, glaber, exsertus; stigma capitellatum, globosum, parvum. *Capsula* lineari-lanceolata, 1·3–2 cm. longa, 4–6 mm. lata, valvis corneis, acutis. *Semina* fusiformia, utrinque acuta, brunnea, laevia, 0·5 mm. longa.

INDIA. Assam; Lushai Hills, about 1700 m., near Sailsuk, Muallung, on the Chin Hill border, and Vanlaiphai, Sept.–Nov., *Mr. and Mrs. N. E. Parry* (type in Herb. Kew.).

This is the first record of a *Petrocosmea* from India; of the 15 species described hitherto 14 are Chinese and 1 is from Siam.

This little plant grows gregariously, associated with Begonias, on moss covered rocks over which water trickles during part of the year; in winter it is subject to frost. Its habit and its brilliant flowers should make it an attractive recruit for the rock garden, for which it is being tried for hardiness. The top of the corm and the bases of the petioles and peduncles are densely felted. One of the flowers received had 6 corolla lobes.

1149. **Drypetes (Hemicyclia) Kurziana** *C. E. C. Fischer* [Euphorbiaceae]; *D. andamanicae* (Kurz) Pax et K. Hoffm. affinis, ramulis hornotinis pubescentibus, foliis majoribus, petiolis supra noncanaliculatis, fructibus majoribus, putamine reticulationibus elevatis differt.

Arbor, ramuli hornotini minute fusco- vel flavo-pubescentes, demum glabri, pallido-brunnei. *Folia* lanceolata, obtuse acuminata, apiculata, utrinque glabra, 7–14 cm. longa, 2–4 cm. lata, basi angustata, obliqua; costa supra subelevata, infra prominens, primo basi infra paullo pubescens, nerviis primariis 10–13 paribus, paullo irregularibus haud prominentibus margine anastomosantibus reticulationibus minutis indistinctis marginibus saepius crenato-serratis, crenaturis saepius minute nigro-mucronatis. *Petioli* 5–7 mm. longi, teretes paullo rugosi, primo fulvo-pubescentes, demum glabri. *Flores* axillares, solitarii vel bini. *Gemmae* ♂ globosae, ♀ ellipsoideae. *Pedicelli* ♂ circa 4 mm. longi, ♀ 4–5 mm. longi, fructu ad 1 cm. longi; ♂ et ♀ minute fulvo-pubescentes, basi bracteis 2–3 triangularibus, pubescentibus muniti. *Sepala* ♂ 4, libera, exteriora orbicularia, interiora suborbicularia vel orbiculato-spathulata, saepius concava, circa 3 mm. longa, breviter ciliata, utrinque minute pubescentia. *Discus* tenuis, planus, glaber. *Stamina* circa 28, glabra, circa 2·5 mm. longa; filamenta brevia; antherae oblongae, 4-locellata, basi lobulis 2, rotundatis. *Pistillodium* 0. *Sepala* ♀ 4, libera, ovato-oblonga vel spathulata, 5 mm. longa, extus pubescentia, intus villosa, apice rotundata. *Discus* annularis, carnosus, margine minute lobulatus. *Ovarium* ovatum, 2 mm. longum, glabrum, lateris basi sulcatum; stigmata 2, subsessilia, flabellata, glabra, supra papillosa. *Drupa* ellipsoidea, paullo compressa, 1·5 cm. longa, 0·9 cm. lata, 0·7 cm. crassa, pulpa intus fibrosa. *Putamen* osseum, compresso-ovatum, acutum basi rotundatum, drupa paullo minus, in dorso et lateribus reticulationibus elevatis ornatum, ventraliter obtuse rostratum, umbonatum, infra ad basin alte sulcatum; ab umbone spina (columella ?) in sulca ad basin recumbit. *Semen* compresso-ovatum, acutum, ventraliter bicarinatum, inter carinas late sulcatum.

Burma. Tharawaddy District, Old Athayan Reserve, "in swampy forests", March and April, *Range Officer* 3.

Vernacular Name: Leikyin.

The ovary is 1-celled with 2 pendant collateral ovules under a single obturator, but at the apex of the ovary shows signs of having

b *c* *a*

Putamen of *Drypetes Kurziana* Fisch.

a. dorsal aspect. b. ventral aspect showing the columella (?). c. side view. (All about natural size.)

a bi-locular origin. The curious spine on the ventral surface of the putamen seems to be the persistent columella of a 2–3 stoned fruit become one-stoned by abortion. Very young flowers are required to establish this point.

1150. **Pennisetum Basedowii** *Summerhayes et C. E. Hubbard* [Gramineae]; affinis *P. villoso* R. Br. a quo setis scaberulis tantum, exterioribus quam interioribus multo brevioribus, spiculis satis brevioribus, gluma superiore 10–11-nervia differt.

Basis ignota. *Culmi* ultra 30 cm. alti, teretes, infra inflorescentiam scaberuli, ceterum glabri, pauciramosi, 3-nodi, nodis glabris. *Foliorum vaginae* solutae, internodiis breviores, compressae, glabrae, laeves; ligulae truncatae, 0·5 mm. longae, ciliatae; laminae lineares, longe attenuatae, acutae vel acutissimae, apice callosae, 12–17 cm. longae, 3–6·5 mm. latae, conduplicatae, utrinque glabrae, marginibus scaberulis. *Inflorescentia* spiciforma, cum setis 5·5–7 cm. longa, circiter 6 cm. lata, densa, pallide straminea; rhachis angulata, angulis scabrido-ciliatis; pedicelli brevissimi, 0·75 mm. longi, pilis brevissimis sericeis albidis dense induti; involucri setae numerosae, exteriores breviores, 0·5–18 (saepissime 6–8) mm. longae, filiformes, minute scaberulae, interiores saepe 4, 2·5–3·5 cm. longae, a basi ad 8 mm. sursum sensim attenuatae, superne filiformes, scaberulae. *Spiculae* solitariae, lanceolatae, acuminatae, 6·5–6·8 mm. longae, pallidae, a uno latere suffuso-purpureae. *Gluma* inferior deest; gluma superior ovata, acuminata, 6·5 mm. longa, 10–11 nervia, nervis parallelis anastomosantibus, subhyalina, apice scaberula. *Anthoecium inferum* ad lemma reductum; lemma ovatum, acuminatum, 6·5–6·8 mm. longum, 7-nervium, subhyalinum, apice scaberulum. *Anthoecium superum* ♀; lemma lanceolatum, acuminatum, 6 mm. longum, 5-nervium, subchartaceum, marginibus subhyalinis, minute obscureque rugulosum, apice scaberulum; palea lemmati similis, sed angustior, apice minute bifida. *Antherae* non visae. *Styli* basi breviter connati, superne liberi, stigmata ab apice spiculae exserta. *Caryopsis* oblonga, 2 mm. longa, albido-lutea.

Western Australia. May River, King Sound, Apr., *Basedow* 13. N.W.

LV.—NOTES ON AFRICAN GRASSES: III.*

New Species of **Melinis** Beauv.

M. mollis *Stapf et Hubbard*, sp. nov.; affinis *M. Goetzenii* Mez, sed spiculis minoribus, gluma superiore ad carinam et lemmate ad margines longe hirsutis, praeterea glabris, foliis mollissime hirsutis differt.

Gramen perenne. *Culmi* vagantes, e basi decumbente ascendentes, ad 1·2 m. alti, teretes, graciles, inferne molliter pilosi et

* Continued from *Kew Bull.*, 1926, p. 368.

tuberculati, paniculam versus glabri et laeves, multiramosi, multinodi, nodis pilosis. *Folia* breviter et molliter pubescentia vel pilosa, tenuiter tuberculata. *Vaginae* inferne solutae, superne arctae, tenuiter striatae. *Ligulae* ad seriem ciliarum reductae, pilis ad 1 mm. longis. *Laminae* lineares, tenuiter acutae, 8–12 cm. longae, 4–6 mm. latae, marginibus asperulis breviterque ciliatis. *Panicula* 11–17·5 cm. longa, linearis, e vagina summa longe exserta, omnibus partibus minute scaberula; rhachis teres, gracilis, tenuiter striata; rami 2–3-nati, erecti vel leviter patentes; ramuli et pedicelli flexuosi; pedicelli inaequales, 0·5–3·5 mm. longi, infra apicem leviter incrassatum pilis brevibus paucis argenteo-nitentibus muniti. *Spiculae* oblongae, 3 mm. longae, inferne virides, superne purpureo-suffusae, sparse pilosae, tenuiter nervosae. *Gluma inferior* ovata, obtusa, 0·1 mm. longa, glabra, enervia; gluma superior 3 mm. longa, ovato-oblonga, 2-loba, lobis obtusis 0·4–0·5 mm. longis, arista gracili stricta ad 2 mm. longa e sinu instructa, tenuiter membranacea, carina pilis densis ad 3 mm. longis albis vel purpureo-suffusis e tuberculis minutis longe pilosa, 6–7-nervia, nervis anastomosantibus. *Anthoecium inferum* sterile; lemma 3 mm. longum, anguste ovato-oblongum, 2-lobum, lobis tenuiter acutis 0·75 mm. longis, e sinu arista flexuosa purpurea ad 9 mm. longa instructa, marginibus longe pilosum, 5-nervium; palea linearis, 1·5 mm. longa, minute bifida, carinis minute scaberulis. *Anthoecium superum* ♀; lemma ovatum, 2 mm. longum, minute bifidum, obscure 3-nervium, palea paulo brevior et angustior.

Tropical Africa. Angola: Cuanza Norte, Cassoalala, near the river Lukala, 40 m., *Gossweiler* 8925.

M. Eylesii *Stapf et Hubbard*, sp. nov.; affinis *M. ambiguae* Hack., sed spiculis breviter hirsutis et foliis mollissime diu tomentosis differt.

Gramen perenne. *Culmi* laxe caespitosi, erecti vel ascendentes, 1–1·2 m. longi, teretes, graciles, firmi, pubescentes vel pilosi, pilis erectis patulis vel reflexis albis, paniculam versus glabri, multinodi, nodis villosis. *Foliorum vaginae* inferiores subpersistentes, arctae, internodiis breviores, superiores laxiores, internodiis longiores, tenuiter striatae, minute tuberculatae, pubescentes vel pilosae vel summae glabrae; nodi villosi. *Ligulae* ad seriem ciliarum reductae, pilis ad 1 mm. longis. *Laminae* lineares, longe et tenuiter acutae, 7·5–15 cm. longae, 5–6 mm. latae, planae, utrinque molliter tomentosae, ad margines pilis e tuberculis ortis sparse fimbriatae et ciliolatae. *Panicula* linearis, 15–18 cm. longa, contracta, purpurascens, omnibus partibus minute et obscure scaberula; rami erecti, 1–3-nati, tenues; ramuli et pedicelli flexuosi, capillares; pedicelli 1–3 mm. longi, infra apicem leviter incrassatum pilis 0·5–1 mm. longis argenteo-nitentibus muniti. *Spiculae* oblongae, 2·5–2·7 mm. longae, breviter et sparse pilosae. *Gluma inferior* ovata, acuta vel obtusa, 0·4–0·5 mm. longa, obscure 1-nervia vel enervia, glabra, hyalina;

gluma superior late oblonga, spiculam aequans, 2-loba, lobis obtusis glabris circiter 0·6 mm. longis, arista flexuosa viridi 4–6 mm. longa e sinu instructa, membranacea, versus margines sparse pilosa pilis albis brevibus, 7-nervia. *Anthoecium inferum* sterile; lemma anguste oblongum 2 mm. longum, 2-lobum, lobis acutis 0·6 mm. longis, e sinu arista tenui flexuosa 8–10 mm. longa instructum, tenuiter 5-nervium, versus margines sparse pilosum; palea 0. *Anthoecium superum* ♀; lemma ovatum, obtusum, 2 mm. longum, obscure 3-nervium, minute bifidum, palea similis. Tropical Africa. Rhodesia: Salisbury, 1500–1560 m., common among rocks, *Eyles* 2276 (type); Marandellas, 1500 m., *Eyles* 1635.

M. pallida *Stapf et Hubbard*, sp. nov.; affinis *M. Eylesii* Stapf et Hubbard, sed spiculis glabris et nervis glumae superioris anastomosantibus differt.

Gramen perenne. *Culmi* 90–120 cm. longi, e rhizomate brevi orti, teretes, tenuiter striati, pubescentes vel pilosi, pilis adpressis vel patulis, paniculam versus sparse pubescentes vel glabri laevesque, multinodi, nodis villosis. *Foliorum vaginae* solutae, tenuiter striatae et tuberculatae, plerumque internodiis breviores, pubescentes vel pilosae. *Ligulae* ad seriem ciliarum reductae, pilis 0·6 mm. longis. *Laminae* lineares, longe et tenuiter acutae, 7–15 cm. longae, 5–7 mm. latae, planae, supra glabrae vel sparse pubescentes et infra pilis debilibus albis e tuberculis minutis indutae, ad margines tuberculis ciliolisque asperulae. *Panicula* ad 20 cm. longa, anguste oblonga, moderate laxa; rhachis laevis, tenuiter striata, gracilis; rami erecti, 2-nati, laeves; ramuli et pedicelli minute puberuli, capillares, flexuosi; pedicelli 0·5–2 mm. longi, glabri. *Spiculae* oblongae, 2·5 mm. longae, glabrae, pallidae, sursum versus purpurascentes, tenuiter nervosae. *Gluma inferior* ovata, obtusa, 0·3 mm. longa, enervia, hyalina; gluma superior ovato-oblonga, spiculam aequans, breviter 2-loba, lobis latis ovatis obtusis 0·6 mm. longis, e sinu arista gracili ad 4 mm. longa instructa, tenuiter membranacea, 7-nervia, nervis anastomosantibus. *Anthoecium inferum* sterile; lemma anguste oblongum, glumae superiori simile, sed brevius, 5-nervium, 2-lobum, lobis tenuiter acutis 0·8 mm. longis, e sinu arista flexuosa 10–12 mm. longa instructum; palea 0. *Anthoecium superum* ♀; lemma ovatum, 1·5 mm. longum, bifidum, obscure 3-nervium; palea lemmati similis. *Antherae* lineares, circiter 2 mm. longae. Tropical Africa. Angola: Huilla, Mounyino, forest glades, 1760 m., *Dekindt* 419 (type in Herb. Berol.).

M. biaristata *Stapf et Hubbard*, sp. nov.; affinis *M. pallidae* Stapf et Hubbard, sed gramen annuum, spiculis breviter hirsutis, nervis glumae superioris non anastomosantibus differt.

Gramen annuum. *Culmi* ascendentes, ad 90 cm. alti, graciles, inferne asperuli et hirsuti, praeterea glabri, multinodi, nodis villosis. *Foliorum vaginae* solutae, leviter striatae, tuberculatae

et hirsutae, leviter viscosae. *Laminae* lineares, longe et tenuiter acutae, 7–14 cm. longae, 5–6 mm. latae, planae, utrinque hirsutae et tuberculatae, marginibus ciliolatis. *Panicula* ad 18 cm. longa; ramuli et pedicelli capillares, flexuosi; pedicelli ad 4 mm. longi, infra apicem pilis brevibus paucis argenteo-nitentibus muniti. *Spiculae* lineari-oblongae, 2·5–3·3 mm. longae, sursum versus sparse et obscure hirsutae. *Gluma inferior* ovata, obtusa, minuta, glabra, hyalina, enervia; gluma superior ovato-oblonga, spiculam aequans, 2-loba, lobis late acutis glabris 0·6–0·8 mm. longis, e sinu arista purpurea 3 mm. longa instructa, tenuiter membranacea, tenuiter 7-nervia, sursum versus sparse et breviter hirsuta. *Anthoecium inferum* sterile; lemma anguste ovato-oblongum, 2·3 mm. longum, tenuiter 5-nervium, 2-lobum, lobis longe et tenuiter acutis 0·8 mm. longis, e sinu arista gracili flexuosa purpurea ad 24 mm. longa instructum; palea 0. *Anthoecium superum* ♀; lemma ovatum, circiter 2 mm. longum, minute bifidum, palea leviter longior.—*M. minutiflora* var. *biaristata* Rendle in Cat. Afr. Pl. Welw. ii. 200.

Tropical Africa. Angola: Pungo Andongo, sandy thickets near the edges of woods near the Quilanga road, *Welwitsch* 2830.

M. macrochaeta *Stapf et Hubbard*, sp. nov.; affinis *M. tenuinervi* Stapf, sed gramen annuum, spiculis molliter membranaceis nec inter nervos sulcatis differt.

Gramen annuum. *Culmi* ad 1·2 m. alti, erecti vel ascendentes, teretes, graciles vel validi, firmi, glabri laevesque vel sparse hirsuti et tuberculati, multinodi, nodis pilosis, simplices vel sparse ramosi. *Foliorum vaginae* arctae vel solutae, tenuiter striatae, sparse pilosae, dense et tenuiter tuberculatae. *Ligulae* ad seriem brevem ciliarum reductae. *Laminae* lineares vel linearilanceolatae, longe et tenuiter acutae, 5–20 cm. longae, 6–14 mm. latae, tenuiter nervosae, supra sparse hirsutae, infra hirsutae et tuberculatae. *Panicula* ex anguste oblongo ad late ovatum vergens, effusa vel contracta, densa vel laxa, 7·5–20 cm. longa, 1·5–7·5 cm. lata; rhachis tenuiter striata, teres, gracilis, laevis vel minute puberula; rami erecti vel patuli, 2–3-nati; ramuli et pedicelli capillares, flexuosi, purpurascentes, minute scaberuli; pedicelli 0·5–2 mm. longi, glabri. *Spiculae* lineari-vel ovato-oblongae, 1·5–2 mm. longae, glabrae aut sparse vel dense pilosae pilis brevibus mollibus albis. *Gluma inferior* ad marginem minutam hyalinam angustam reducta; gluma superior late ovato-oblonga, spiculam aequans, 2-loba, lobis denticulatis vel integris (raro), glabra vel pilosa, 7-nervia. *Anthoecium inferum* sterile; lemma anguste oblongum, glumae superiore simile, 2-lobum, lobis tenuiter acutis circiter 0·6 mm. longis, e sinu arista tenui flexuosa 10–20 mm. longa instructum, 3–5 (raro)-nervium; palea 0. *Anthoecium superum* ♀; lemma ovato-oblongum, circiter 1·3 mm. longum, minute bifidum, obscure 3-nervium, hyalinum; palea quam lemma paulo longior et latior. *Antherae* 1–1·3 mm. longae.—*M. minutiflora*

Rendle in Cat. Afr. Pl. Welw. ii. 199. Durand et Schinz Consp. Fl. Afr. v. 735 (p.p.). K. Schum. in Engl. Pflanz. Ost. Afrik. C.99 (p.p.). Pilger in Fries, Wiss. Ergebn. Schwed. Rhod.-Kongo. Exped. ii. 199; non Beauv.

Tropical Africa. N. Nigeria: Lely 785 (type). Belgian Congo: Elisabethville, *Rogers* 10990, 10998, 10902. Angola: Benguella, *Gossweiler* 3930; Golungo Alto, *Welwitsch* 2992. Tanganyika Territory: Ungoni, Kwa-Kihingi, *Busse* 743. Rhodesia: Salisbury, *Eyles* 2240, 2266, 3396; Bangweolo, *Fries* 951a.

M. effusa *Stapf* in Kew Bull. 1922, 310 (nomen); affinis *M. tenuissimae* Stapf, sed laminis hirsutis glanduloso-viscosis, rhachi paniculae minute scaberula, gluma superiore 7-nervia differt.

Gramen perenne, viscosum. *Culmi* erecti vel e rhizomate breve ascendentes, ad 1 m. alti, teretes, tenues, glabri et laeves vel sparse hirsuti, ramosi, multinodi, nodis pilosis vel villosis. *Folia* dense vel sparse pubescentia vel pilosa, tenuiter tuberculata. *Vaginae inferiores* arctae, tenuiter striatae, internodiis breviores, superiores longiores, laxiores. *Laminae* lineares vel linearilanceolatae, 6-13 cm. longae, 4–10 mm. latae, longe et tenuiter acutae, infra glaucae, marginibus scaberulis et sparse vel dense fimbriatis, pilis e tuberculis ortis. *Panicula* e lineare ad ovato-oblongum vergens, 9–23 cm. longa, 2·5–5 cm. lata, effusa, flexuosa, purpurascens, omnibus partibus minute scaberulis; rhachis gracilis, tenuiter striata; rami ascendentes, 2–3-nati, tenues; ramuli et pedicelli capillares, flexuosi; pedicelli 0·6–3 mm. longi, infra apicem leviter incrassatum pilis ad 2 mm. longis argenteo-nitentibus muniti. *Spiculae* ovato-oblongae, 1·5–1·75 mm. longae, fere glabrae, purpurascentes, delicate nervosae. *Gluma inferior* ovata vel ovato-oblonga, obtusa, ad 0·3 mm. longa, hyalina, enervia vel ad marginem angustam reducta, e callo minute hirsuta; gluma superior late ovato-oblonga, spiculam aequans, 2–loba, lobis obtusis 0·3 mm. longis, breviter mucronata vel emucronata, molliter membranacea, superne marginibus ciliolatis et interdum prope apicem pilis paucis induta, 7-nervia. *Anthoecium inferum* sterile; lemma ovato-oblongum, glumae superiori simile, 5-nervium, 2-lobum, lobis acutis 0·5 mm. longis, e sinu arista flexuosa purpurascente 6–8 mm. longa instructum; palea 0. *Anthoecium superum* ♀; lemma ovato-oblongum, circiter 1 mm. longum, obscure 1–3-nervium, hyalinum, minute bifidum; palea lemma subaequans, sed latior et truncata.—*M. minutiflora* var. *effusa* Rendle in Cat. Afr. Pl. Welw. ii. 200 (p.p.).

Tropical Africa. Angola: Golungo Alto, in poor soil in sunny places near Cambondo, *Welwitsch* 2958.

M. purpurea *Stapf et Hubbard*, sp. nov.; affinis *M. tenuinervi* Stapf, sed culmis gracilibus, panicula angustiore, spicularum aristis brevioribus differt.

Gramen perenne. *Culmi* e basi multinoda ramosa prostrata ascendentes, 2–3-foliati, 30–60 cm. longi, teretes, graciles, glabri, purpurascentes, 1–3-nodi, nodis pilosis; innovationes densius foliatae, breves. *Folia* laxe pilosa vel tomentosa, tenuiter tuberculata. *Vaginae inferiores* breves, densae, imbricatae, superiores longae, arctae, tenuiter striatae, internodiis breviores. *Ligulae* ad seriem albarum ciliarum reducta, pilis ad 1 mm. longis. *Laminae* lineares vel lineari-subulatae, tenuiter acutae, 1·25–5 cm. longae, 2–4 mm. latae, firmae, rigidae, planae vel involutae. *Panicula* 5–10 cm. longa, 0·75–1·25 cm. lata, linearis, densa, erecta, atro-purpurascens, undique minute scaberula; rhachis gracilis, teres, tenuiter striata; rami 2–3-nati, erecti; ramuli et pedicelli flexuosi, capillares; pedicelli 0·5–2 mm. longi, glabri. *Spiculae* lineari- vel lanceolato-oblongae, circiter 2 mm. longae, tenuiter sulcatae et nervosae, breviter pilosae. *Gluma inferior* 0·4 mm. longa, ovata, obtusa, enervia, glabra; gluma superior oblonga, spiculam aequans, 2-loba, lobis latis rotundato-obtusis glabris 0·4 mm. longis, breviter mucronata, membranacea, pilosa, pilis brevibus mollibus albis, 7-nervia. *Anthoecium inferum* sterile; lemma anguste oblongum, gluma superiori simile, 5-nervium, 2-lobum, lobis angusti sacutis circiter 0·6 mm. longis, e sinu arista 2–6 mm. longa instructum; palea 0. *Anthoecium inferum* ♀; lemma ovato-oblongum, 1·5–1·75 mm. longum, hyalinum, obscure 1–3-nervium, minute bifidum; palea lemmati similis.
TROPICAL AFRICA. Tanganyika Territory: Rungwe Mt., eastern flank, near Muakaleli, 1600 m., *Stolz* 1341.

M. Maitlandii *Stapf et Hubbard*, sp. nov.; affinis *M. tenuinervi* Stapf, sed spiculis superne longe hirsutis (pilis apicem 1 mm. superantibus), praeterea callo breviter hirsuto differt.

Gramen perenne. *Culmi* erecti vel ascendentes, 60–70 cm. longi, moderate validi, teretes, glabri, multinodi. *Folia* sparse vel dense hirsuta pilis e tuberculis induta. *Vaginae* solutae, imbricatae, tenuiter striatae, nodis barbatis. *Ligulae* ad seriem albarum ciliarum reductae, pilis ad 1 mm. longis. *Laminae* lineares, longe et tenuiter acutae, 7·5–15 cm. longae, 6–8 mm. latae, superiores breviores et angustiores, firmae, planae raro involutae, marginibus asperulis ciliolatisque. *Panicula* linearioblonga, 12·5–20 cm. longa, 1·25–2.25 cm. lata, erecta, densa, flavo-viridis, purpurea aut viridi-purpureo variegata; rami 2–3-nati, erecti; ramuli et pedicelli flexuosi, capillares, minute et obscure scaberuli; pedicelli 1–2 mm. longi, glabri. *Spiculae* linearioblongae, circiter 2 mm. longae, prominenter nervosae et sulcatae, superne longe pilosae. *Gluma inferior* ad marginem angustam reducta vel ovata, obtusa aut acuta, hyalina, ad 0·25 mm. longa, enervia, e callo hirsuta, pilis ad 1 mm. longis; gluma superior oblonga, spiculam aequans, 2-loba, lobis brevibus rotundatis, mucronata vel emucronata, membranacea, glabra vel inferne ad margines hirsuta, superne sparse pilosa, pilis longis albis apicem 1 mm. superantibus, 7-nervia. *Anthoecium inferum* sterile; lemma

anguste oblongum, glumae superiori simile, 2-lobum, lobis angustis acutis 0·4 mm. longis, e sinu arista stricta vel flexuosa 6–12 mm. longa instructum, 5-nervium; palea 0. *Anthoecium superum* ♀; lemma ovato-oblongum, 1·2–1·6 mm. longum, obscure 1–3-nervia, hyalinum, minute bifidum; palea lemmati similis. *Antherae* lineari-oblongae, 1·2 mm. longae.

TROPICAL AFRICA. Uganda: Bufumira Islands, Sesse, 1100 m., in open-growing glades near forest, *Maitland* 360 (type). Nyasaland: Nyika Plateau, 1800–2100 m., *Whyte*.

LVI.—CONTRIBUTIONS TO THE FLORA OF BURMA.

C. E. C. FISCHER.

The present paper mainly deals with a collection made in January and February, 1926, in South Tenasserim by Mr. C. E. Parkinson, Forest Botanist, Burma. In addition some of the plants described were obtained by Mr. Parkinson in North Burma and some gathered in Tavoy by Mr. R. N. Parker, Imperial Forest Botanist for India. All the specimens mentioned are in the Herbarium, Royal Botanic Gardens, Kew.

Tenasserim, which forms the southernmost division of Burma, runs in a narrow tongue down to the Malay Peninsula and occupies, in one part where it is separated from the Kingdom of Siam by the Bilaukataung Mountain Range, the greater width between the Indian Ocean and the Gulf of Siam. It includes the ceded Provinces of Mergui and Tavoy, which, together with the Districts of Amherst, Shwe-gyeng, Toung-ngu and the Salween Hill Tracts, make up the Tenasserim Division.

With the exception of a considerable portion of the Amherst District, the whole of Tenasserim is mountainous and sparsely populated and cultivated, the greater part being covered with dense, often evergreen, and mostly virgin, forest. It is an interesting area from the botanical point of view as it is the meeting place of the Indian and Malayan Floras and also because it has been comparatively little explored. Its backward condition and the lack of means of easy communication account for this. A large proportion of the area has never been exploited, even for timber, so that practically no opening up of the remoter tracts has taken place. So much is this the fact that in 1925 it was found advisable to undertake an aerial reconnaissance of a large area of forest in order to arrive at some knowledge of the configuration and the constitution of the forests, this method, in the absence of means of communication and facilities for camping, being the cheapest and most expeditious.

In these circumstances it is not surprising to find that a considerable proportion of the species represented in the collections under review are new, and also that others have been obtained previously only from Malaya or Siam. It is highly probable that further exploration will yield many more new species, and the

time when anything like a full survey of the flora of Tenasserim is possible is far distant.

Until quite recent years botanical collections were confined almost entirely to the coastal tracts and to the immediate vicinity of rivers at no great distance from the sea. It will be not without interest to mention the botanists who are known to have collected in the region. Besides professional botanists and collectors the list, during later years at least, includes Forest Officers who have managed to collect in the course of official tours, as well as those who have been on special forest botanical duty like Mr. Parker and Mr. Parkinson. The following list has been compiled very largely from the labels on the specimens in the Kew Herbarium and in many cases the dates have been obtained from the same source. The names are arranged in chronological order of collecting or of residence in Tenasserim.

Dr. W. Carey. A missionary resident in Burma and India from 1794 to 1834. Apparently collected for Wallich, Roxburgh and Wight.

Dr. N. Wallich. Superintendent of the Royal Botanic Garden, Calcutta. Collected along the Salween and Attaran Rivers and in the neighbourhood of Moulmein in 1827 when on deputation to inspect and report on the teak forests of the newly acquired tracts.

Gomez. 1827. Deputed by Wallich.

Rev. Francis Mason. A missionary in Burma from 1830 to 1874. Author of a work entitled "Burma."

William Griffith. Stationed in Tenasserim in 1833 and 1834.

Dr. Helfer. 1836. When deputed to report on the forests.

T. Lobb. 1847. Collected for Veitch.

Dr. Hugh Falconer. Superintendent of the Royal Botanic Garden, Calcutta. Collected in 1849 when deputed to report on the teak forests.

Dr. J. MacClelland. In charge of the forests from 1852 to 1855.

Rev. C. S. P. Parish. Chaplain in Burma from 1852 to 1878.

Dr. (later Sir) D. Brandis. Forest Service. 1856 to 1880.

Dr. H. Cleghorn. Date? While on a visit from Madras, where he was Conservator of Forests from 1856 to about 1870.

S. Kurz. Curator, Royal Botanic Garden, Calcutta, and author of "Forest Flora of British Burma." 1871 and 1872.

Col. Scott. 1867.

A. C. Maingay. 1869.

F. Stoliczka. An officer of the Geological Department. 1869.

G. Gallatly. Deputed for collecting from the Royal Botanic Garden, Calcutta, in 1877.

Col. R. Beddome. 1879. Apparently when on a short visit from Madras, probably to get some knowledge of the Burma teak forests.

1884 and 1885. Unnamed collectors deputed from the Royal Botanic Garden, Calcutta.

T. H. Aplin. 1888.
R. L. Proudlock. 1892.
Shaik Mokim. 1900. Deputed from the Royal Botanic Garden, Calcutta.
W. H. Craddock. 1901. Civil Service.
F. B. Manson. 1905. Forest Service.
J. H. Lace. 1908 to 1913. Forest Service.
W. A. Robertson. 1911. Forest Service.
A. Meebold. 1911. A travelling botanical explorer.
E. M. Buchanan. 1912. Forest Service.
D. P. Hewett. 1912. Forest Service.
R. N. Parker. 1925. Forest Service, Imperial Forest Botanist for India, Dehra Dun.
C. W. Scott. 1925. Forest Service, presumably when in charge of the aerial forest survey referred to above.
C. E. Parkinson. 1925 and 1926. Forest Service, Forest Botanist, Burma.

Special mention should be made of the excellent botanical work of the indefatigable collector, J. H. Lace, at one time Inspector General of Forests, who collected in many parts of Burma and India and added very much to the knowledge of the flora of those regions.

Artabotrys siamensis *Miq.* [Anonaceae].

A climber previously known only from Siam.

South Tenasserim. Mai nam wat, Theinkun chaung, 400 ft., Feb., *C. E. Parkinson* 1907.

Desmos caudatus *Fischer* [Anonaceae]; *D. chinensi* (Lour.) Saff. affinis, foliis caudatis, floribus axillaribus minoribus, pedunculis minoribus, sepalis et petalis hirsutis differt.

Tree up to 30 feet high; young twigs covered with longish, more or less appressed, and short, patent, brown hairs; branchlets glabrescent, the longer hairs disappearing first, grey, shallowly furrowed. *Leaves* narrowly to broadly elliptic, bluntly caudate, narrowed to the base, 7–11 cm. long, 2·2–4 cm. wide, caudicle 0·8–1·3 cm. long, brownish when dry, glabrous above except the pubescent midrib even when young, with appressed long and patent short hairs on the nerves beneath and sparingly also on the surface between, midrib channelled above, prominent below, primary nerves 6–9, impressed above, prominent below, slightly curved, anastomosing a short distance from the margin in one or two loops, secondary nerves transverse, indistinct. *Petioles* terete, 2–4 mm. long, indumentum as on the nerves beneath. *Flowers* solitary, axillary; peduncle 2–3 mm. long, curved, hairy with one or two small triangular hairy bracts near the base, pale-yellow. *Sepals* 3, free, broadly ovate, obtuse, about 3 mm. long, strongly ciliate and strigose on both faces with stiff grey or brownish appressed hairs, obscurely veined. *Petals* 6, subfleshy, the 3 outer linear, lanceolate, subacute, 2–4·2 cm. long, 5–8 mm. wide, ciliate-

hirsute with brownish hairs, which are long at the base and shorten upwards, the 3 inner petals a little shorter and narrower with similar indumentum, more fleshy and somewhat cupped at the base. *Stamens* mixed with brown, hairy scales, crowded, glabrous, wedge-shaped, 1·5–2·5 mm. long, about 1 mm. wide, the outer shorter and narrower, filament very short, stout, flattened, narrowed downwards, pale-brown, connective enlarged and concealing the anther from above, those of the central stamens more or less pentagonal truncate at the apex and with or without a minute cusp at each angle, those of the outer smaller and flat, with the anthers dark-brown and minutely punctate. *Carpels* about 5, linear, 2·5–3·5 mm. long, densely hirsute with stiff brown hairs; style globose, black, minutely pustular, sparsely hirsute with short brown hairs; ovules 6 in a single row. *Fruit* not seen.

South Tenasserim. Ngawun chaung forest, 300 ft., Jan., *C. E. Parkinson* 1633.

Desmos dumosa (*Roxb.*) *Saff.* [Anonaceae].

Previously reported from Assam and the Malay Peninsula. Forests near Tenasserim, 300 ft., Jan., *C. E. Parkinson* 1646.

Mitrephora vulpina *Fischer* [Anonaceae]; *M. Maingayo* Hook. f. affinis, foliis subtus ferrugineo-tomentosis, racemis longioribus, pedicellis longioribus, ovulis pluribus differt.

Tree 80–90 feet high; young parts ferruginous-tomentose, twigs glabrescent, grey. *Leaves* elliptic, elliptic-oblong, obovate-oblong or suborbicular, apex rounded, cuspidate or acutely acuminate, base rounded sometimes emarginate, 6–11 cm. long, 4–6·5 cm. wide, densely rusty-tomentose on both surfaces in youth, more especially on the nerves beneath, becoming quite glabrous and shining above, except the channelled midrib, permanently rusty-tomentose on the nerves below and more or less pubescent between, primary nerves 10–14 pairs, usually 12, distinct above, prominent below, ascending, usually regular and nearly straight to near the margin and then arching, but often forking or two adjacent ones uniting and perhaps again separating, nervules indistinct, ultimately finely reticulating, margin slightly revolute. *Petioles* channelled above, 5–8 mm. long, indumentum as of the undersurface of the blade. *Inflorescence* of extra-axillary racemes, 12 or more flowered, 3–6 cm. long, rhachis velvety, ferruginous at first, later brown, nodes close, somewhat swollen. *Flowers* about 3 cm. diam., pedicels 2–2·5 cm. long, enlarged upwards, ferruginous-tomentose, bearing a clasping, subacute bract, which is ferruginous-tomentose without and glabrous and veined within, about 5 mm. below the flower, 3–4 mm. long, 7–8 mm. wide. *Bud* reniform, nearly twice as broad as long, ferruginous tomentose. *Sepals* 3, shortly connate at the base, thick, subrotund, subacute, 5 mm. diam., shaggy with ferruginous hairs without, glabrous within. *Petals* 6, dark-purplish, 3 outer valvate in bud,

spreading in flower, obovate to oblanceolate, apex rounded or subacute, narrow or broad at base, 1·6–2 cm. long, ferruginous-hairy without, especially medially, glabrous on the lower half within and then increasingly ferruginous-pubescent towards the apex, margins entire, undulate or slightly erose, 3 inner petals inflexed over the stamens, vaulted and induplicate-valvate, early deciduous, broadly rhomboid with more or less acute angles, broadly clawed, about two-thirds the length of the outer petals; claws glabrous, more or less ferruginous-pubescent above, yellow with fine red streaks. *Stamens* crowded, connective flat, concealing the anthers. *Carpels* 16–20, mixed with brownish bristles, narrowing into the style, dotted with short bristles, especially near the apex; style short, somewhat angular, nearly as long as the carpel; ovules 8. *Fruit* not seen.

South Tenasserim. Naungbwa, Theinkun chaung, 200 ft., Feb., *C. E. Parkinson* 1698.

This species comes very near *M. Collinsae* Craib of which the flowers are unknown; it differs in the indumentum, which is shorter, more ferruginous, persistent on the underside of the leaves and less spread over the surface between the nerves; the nerves of the leaves are straighter; the inflorescence is longer and the flowers more numerous. It is not possible to compare the floral anatomy but dissection of very young buds of *M. Collinsae* seem to indicate that the shapes and proportions of the floral parts differ. Further material of the last-named species may possible necessitate the uniting of the two and, consequently, the disappearance of this specific name.

Mitrephora multiovulata *Fischer* [Anonaceae]; *M. reticulatae* Hook. f. & T. affinis, nervis foliorum paucioribus, floribus valde majoribus, ovulis valde pluribus differt.

Tree about 30 feet high; branchlets glabrous, dark-grey, irregularly furrowed, inner bark black; twigs slender, glabrous, light-brown, wrinkled when dry. *Leaves* membranous, lanceolate or elliptic, obtusely acuminate, base cuneate or rounded, 13–23 cm. long, 3·5–7 cm. wide, margins entire, midrib channelled above, prominent below, primary nerves 8–10 pairs, slender, distinct above when dry, subprominent below, arched and anastomosing in several loops a little within the margin, secondary nerves hardly less distinct, transverse, ultimate reticulations minute, glabrous above, with scattered hairs below, minutely pellucid-dotted. *Petioles* channelled above, about 5 mm. long, transversely rugose, dark-brown or nearly black, glabrous or with a few brownish or blackish hairs. *Inflorescence* in the axils of existing leaves or of fallen leaves on the branchlets; peduncle 2-flowered, usually solitary, 2–4 mm. long, tawny-pubescent, bearing 1 or 2 minute shaggy bracts and a larger one subtending the pedicels. *Flowers* monoecious; pedicels slender, 2–3 cm. long, whitish- or tawny-pubescent with a minute tawny, shaggy bracteole about the middle, rarely

a little below the flower. *Bud* depressed-globose, tawny-pubescent. *Sepals* 3, connate for about half their length, 3–4 mm. long, tawny-tomentose without, glabrous within, lobes semicircular, ciliate. *Petals* 6, 3 outer broadly ovate, subacute, valvate in bud, spreading in flower, about 1 cm. long, 0·75 cm. wide, thin, veined, gland-dotted, ciliate, greyish-pubescent without, glabrous within, white or pale-greenish; the 3 inner valvate, connivent over the torus, suborbicular with a narrow or broad claw half the total length, about 1·5 cm. long, more or less minutely tawny- or dark-pubescent and pustular without, less so within, thicker than the outer, purplish. *Torus* narrow, conical in bud, convex in flower, grey- or tawny-hairy. *Stamens* in the male flower crowded, connectives flat and concealing the anthers, in the female reduced to a very few imperfect ones. *Pistil* absent in the males, in the females consisting of about 8 ellipsoid, fuscous pubescent carpels about 3 mm. long, with sessile, peltate, more or less lobed, minutely pustulate, black stigmas; ovules 24 (always ?) in 2 rows. *Fruit* not seen.

South Tenasserim. Htahpe chaung, 300 ft., Jan., *C. E. Parkinson* 1617 (type); Mai nam wat, Theinkun chaung, 300 ft., Feb., *C. E. Parkinson* 1901.

Like *M. reticulata* Hook. f. & T., this species links *Orophea* and *Mitrephora*, having the few stamens in the female flower and the inner petals longer than the outer which are characteristic of the first genus, but having the numerous and uvarioid stamens in the male and the monoecious flowers of the second.

Sphaerocoryne Blanfordiana *Fischer* [Anonaceae]; *S. clavipedi* Craib affinis, foliis majoribus, pedunculis minoribus rufo-hirsutis, floribus oppositifoliis, petalis minoribus orbicularibus, staminibus angustioribus differt.

"A climber as thick as a man's arm" (Parkinson). *Branchlets* dark-brown, glabrous; twigs dark-brown, very shortly hairy in youth, more or less striate. *Leaves* subcoriaceous, elliptic or slightly oblanceolate-elliptic, narrowed at both ends, apex rounded or acute, 7–17 cm. long, 3–7 cm. wide, quite glabrous, even when young, and brown (when dry) above, glaucous with a few scattered hairs, especially on the pustular midrib, below, margins narrowly cartilaginous and slightly revolute, midrib channelled above, prominent and reddish below, primary nerves slender, hardly more prominent than the secondary, 8–13 pairs, arching and anastomosing well within the margin, ultimate reticulations fine, obscure. *Petioles* shallowly channelled above, 4–6 mm. long, rugose, glabrous. *Peduncles* leaf-opposed, 1-flowered, straight or slightly curved, 1·3–1·6 cm. long, thickened upwards, pustulate and thinly rufous-hairy, with 2–3 densely rufous-hairy, small bracts at the base and one a little higher; somewhat lengthening and considerably thickened in fruit, the persistent calyx lobes forming a sort of beaked collar. *Flowers* solitary, about 1 cm. long and wide,

yellow. *Sepals* 3, 3 mm. long, united below for about half their length, lobes very coriaceous, broadly ovate, apiculate, pustulate on both surfaces, shortly rufous-hairy without, glabrous within, rufous-ciliate. *Petals* 6, free, thickly coriaceous, thickest at the apex, the 3 outer orbicular, slightly concave, apiculate, 8–9 mm. diam., slightly keeled at the apex within, rufous-tomentose without, fuscous-tomentose on the thickened sides and near the apex within, glabrous and rugose on the lower half inside; the 3 inner like the outer but shorter, thicker (up to nearly 2 mm. thick at the apex) and more concave, fuscous-tomentose without, elsewhere glabrous. *Torus* stout, columnar, 2–3 mm. long, with a rim of rufous hairs at the base, glabrous above, apex truncate, shortly rufous-hairy. *Stamens* very numerous, 2–2·5 mm. long, the shape of a tin-tack, glabrous, the connective enlarged, hexagonal, flat, concealing the linear anthers. *Carpels* 40–50, linear, 2·5–3 mm. long; ovaries compressed, densely fuscous-villous, about twice the length of the slightly angular, glabrous, pustulate styles; stigmas conical, acute or bilobed. *Fruit* (young only seen) of about 15 carpels, ellipsoid, stalked, apex rounded or apiculate, densely felted with rufous hairs; stalk shorter than the carpel, grey or rufous, 1-celled, 1-seeded.

South Tenasserim. Thebyu chaung, 200 ft., February, *C. E. Parkinson* 1677; Mayinnge, Tenasserim River, 100 ft., March, *C. E. Parkinson* 1991 (type).

Named in honour of Mr. H. R. Blanford of the Imperial Forest Service, Burma.

Miliusa saccata *Fischer* [Anonaceae]; *M. longipedi* King et *M. cuneatae* Craib affinis, primo foliis caudatis, floribus binis, petalis interioribus saccatis glanduliferis, stigmatibus oblongis differt; secundo foliis caudatis, petalis glanduliferis longioribus, toris hirsutis differt.

A small tree. Branchlets brown, appressed fuscous-pubescent when young, later glabrescent, irregularly furrowed and with scattered, reddish-brown, corky lenticels. *Leaves* oblong, abruptly and acutely acuminate or caudate, rounded or subcuneate at the base, 8–18 cm. long, 4·5–8 cm. wide, caudicle 1–1·5 cm. long, glabrous above, except the minutely puberulous midrib, even when young, shining and sparsely hairy below, densely pellucid-dotted, midrib channelled above, prominent below, primary nerves 10–13 pairs, slender, subprominent below, regular, arching and forming a single loop near the margin, secondaries subregular, transverse, ultimate reticulations fine. *Petioles* channelled above, about 5 mm. long, covered with pustules in transverse rows, tawny-hirsute or nearly glabrous. *Flowers* 2 together in the axils, with several minute, orbicular, tawny-hairy bracts at the base of the pedicels. *Buds* globose, grey-pubescent. *Pedicels* minutely scattered-hairy and pustular in the lower half, 8–10 mm. long, with a small hirsute bracteole below the middle. *Sepals* 3, free, deltoid-ovate,

acute or subacute, 1–2 mm. long, ciliate, grey-hairy without, glabrous or nearly so within, sparingly gland-dotted. *Petals* 6, the 3 outer valvate in bud, spreading in flower, exactly like the sepals but generally very slightly longer; the 3 inner valvate, rather fleshy, saccate at the base, oblong, apex suddenly acute, about 1·6 cm. long, 0·8 cm. wide, obscurely veined, abundantly gland-dotted, glabrous on both sides. *Torus* elongate-ellipsoid, densely grey- or tawny-hairy in the upper half. *Stamens* about 20, 1–1.5 mm. long, filaments thick, more or less angular, bent outwards from beneath the outer rows of carpels, the anthers upright, connective peltiform, obtusely-apiculate, bearing the pollen sacs on the outer face. *Carpels* numerous, narrow, conical, the outer curved, about 1·5 mm. long, tawny-hirsute; styles oblong, about 1 mm. long, rounded at both ends, as wide as the apex of the carpel, smooth, glabrous, often shallowly channelled down one side; ovule 1, basal. *Fruit* not seen.

South Tenasserim. Kallin kwan chaung, 200 ft., Feb., *C. E. Parkinson* 1689.

This species links *Miliusa* with *Saccopetalum* owing to the saccate petals but falls into the first named because of the single-ovuled carpel. "Flowers yellow and deep red" (Parkinson).

Miliusa glandulifera *Fischer* [Anonaceae]; *M. fuscae* Pierre affinis, foliis majoribus, floribus binis glanduliferis, ovulis basalibus differt.

A large shrub. Branchlets glabrous, pale-brown, wrinkled, sparsely scattered with small, corky lenticels, with a bunch of brown hairs at the leaf insertions; young twigs minutely pustular. *Leaves* chartaceous, subsessile, elliptic, apex rounded or shortly, bluntly acuminate, base narrowed, slightly inequilateral, 7·5–15 cm. long, 3–6·5 cm. wide, glabrous above, with a few scattered hairs and the midrib glandular-pustulate below when young, soon quite glabrous, pellucid-dotted, midrib prominent below, primary nerves slender, indistinct, about 12 pairs, anastomosing near the margin with several loops. *Inflorescence* axillary, in few-flowered, erect racemes or cymes; peduncles very short with a boat-shaped, ciliate, sparingly hirsute bract at the base of each pedicel. *Flowers* about 1·3 cm. diam.; pedicels slender, 3–4 cm. long, glabrous, glandular, with a minute, ovate, obtuse, ciliate, glandular bracteole below the middle. *Sepals* 3, united at the base, lobes deltoid-ovate, acute, about 2 mm. long, ciliate, glabrous, densely glandular-pustulate. *Petals* 6, the 3 outer like the sepals but about half as long again and somewhat convex; the 3 inner valvate in bud, spreading in flower, suborbicular, slightly broader than long, bluntly apiculate, 6–7 mm. long, rather fleshy with a thickened, semicircular area at the base, tawny-ciliate, glabrous, densely glandular-pustulate, yellowish. *Torus* elongate. *Stamens* about 20 with a few additional imperfect ones outwards, mixed with whitish or tawny hairs nearly as long as the stamens, about 1 mm.

long, filaments short, stout, connective expanded, rounded at the apex, not concealing the anthers. *Carpels* about 20, mixed with whitish or tawny hairs, obcuneate, somewhat flattened, about 1 mm. long, glabrous, glandular-pustulate; style subglobose, about half the length of the carpel, glandular-pustulate; ovule 1, basal. *Fruit* not seen.

South Tenasserim. Mai nam wat, Theinkun chaung, 300 ft., Feb., *C. E. Parkinson* 1902.

The glands are more numerous and pronounced than in the previous species.

Saccopetalum unguiculatum *Fischer* [Anonaceae]; *S. longifloro* Hook. f. affinis, foliis minoribus, petiolis teretibus, floribus majoribus, petalis unguiculatis, stigmatibus sessilibus globosis differt.

Tree 60–80 feet high; branchlets grey, shallowly furrowed and transversely cracked; youngest twigs densely tawny-pubescent. *Leaves* chartaceous, oblong or obovate-oblong, apex narrowed, shortly, acutely acuminate, base rounded, rarely subcuneate, slightly inequilateral, margin entire, 6–12 cm. long, 3–5·5 cm. wide, copper-coloured when young and thinly tawny-pubescent on both surfaces, more densely so on the nerves, densely ciliate, shining and glabrous above when mature, except on the puberulous midrib, tawny-pubescent below, primary nerves 8–10 pairs, slender, subprominent below, arching and anastomosing near the margin, ultimate reticulations coarse, minutely pellucid-dotted. *Petioles* terete, 2–3 mm. long, tawny- or dark-brown pubescent. *Inflorescence* fascicled or of few-flowered racemes, sessile or shortly peduncled in the axils of existing or of fallen leaves, often 2-flowered, with several small, boat-shaped, tawny-tomentose bracts; rhachis tawny-tomentose, up to 6 mm. long. *Flowers* about 2 cm. long; pedicels slender, 5–13 mm. long, tawny-pubescent, sometimes with a minute bracteole about the middle. *Sepals* free, ovate, apex rounded, 4–5 mm. long, tawny tomentose on both surfaces, obscurely veined. *Petals* 6, the 3 outer similar to the sepals but lanceolate or subspathulate and slightly larger; the 3 inner valvate, deeply saccate at the base, about 1·8 cm. long, boat-shaped with a broad claw about 4 mm. long, apex subacute, tawny-pubescent on both surfaces, strongly veined, yellow with the veins purple. *Stamens* many, sessile, quadrate, connective not produced nor concealing the anthers. *Torus* subglobose, shaggy with tawny hairs. *Carpels* many, more or less 3-gonous, the outer curved and dorsally convex, about 2 mm. long, narrowed upwards to a rounded apex, more or less grey- or tawny-hairy, minutely rugulose, dark-brown or almost black; stigmas sessile, subglobose, similar in texture and indumentum to the carpels but much narrower; ovules 10. *Fruit* not seen.

South Tenasserim. Naungbwa, Theinkun chaung, 200 ft., Feb., *C. E. Parkinson* 1694.

Orophea katschallica *Kurz* [Anonaceae].

South Tenasserim. Mai nam wat, Theinkun chaung, 300 ft., Feb., *C. E. Parkinson* 1700.

Hitherto reported only from the Nicobar Islands.

Asteriastigma macrocarpa *Bedd.* [Flacourtiaceae].

This species had never been seen outside the evergreen forest of the Travancore State in Southern India.

Mytkyina District: Nawraw chaung, Dec., *C. E. Parkinson* 402. There is also a specimen in Herb. Kew. from the Hukong Valley, June, *R. S. Hole* 45.

Calophyllum Parkeri *Fischer* [Guttiferae]; *C. polyantho* Wall. affinis, nerviis foliis obliquis robustioribus, floribus pauci-oribus majoribus, petalis pluribus differt.

A small tree with terete, glabrous twigs; bark cracked into irregular flakes. *Leaves* narrowly to broadly elliptic, narrowed at both ends, apex obtuse, glabrous, 5–8·5 cm. long, 1·6–4 cm. wide, midrib and nerves prominent on both surfaces, midrib channelled above, nerves many, coarse, at an angle of about 40°, no intra-marginal nerve, margin thickened, entire, sometimes slightly undulate. *Petioles* stout, channelled above, glabrous, 0·7–1 cm. long. *Inflorescence* of simple, few-flowered racemes, solitary in the ultimate axils or terminal and several together, shorter than the leaves; rhachis and pedicels stout, more or less quadrangular, glabrous; bracts (not seen) early caducous and leaving large scars; pedicels about 1·3 cm. long. *Buds* globose. *Flowers* 1·5–2 cm. diam. *Sepals* 4, glabrous, shortly ciliate, the 2 outer orbicular, slightly cordate at base, 4–5 mm. diam., the 2 inner suborbicular, 6–7 mm. long. *Petals* 7, suborbicular to obovate, glabrous, shortly ciliate, 8–9 mm. long. *Stamens* very many, united at the base more or less into 4 bundles, glabrous, the inner up to 8 mm. long, the outer a little shorter, the free portion of the filaments filiform; anthers oblong, papillose, about 2 mm. long. *Gynaecium* about 1 cm. long, but owing to the curvature of the style only just over-topping the stamens; ovary subglobose, narrowed to the apex, 4 mm. long; style stout, terete; stigma peltate. *Fruit* not seen.

Tavoy, Nwalabo, 3100 ft., Dec., *R. N. Parker* 2313.

Dipterocarpus obtusifolius *Miq.* var. **cuspidatus** *Fischer* [Dipterocarpaceae]; a typo foliis cuspidatis, indumento fere toto stellato, alis fructus longioribus differt.

A tree up to 100 feet in height and 8 feet in girth. Leaves wider in proportion than those of the type and abruptly cuspidate, the lower half of the leaf is cuneate but rounded at the base; the *petioles* are shaggy with rufous, stellate hairs, simple hairs are apparently altogether wanting or are early deciduous; the two wings of the *fruit* are much longer, attaining 17 cm. in length and 3 cm. in width and are sparingly dotted with small stellate hairs. (Fig. 1.)

South Tenasserim. 'Ngawun Reserve, 200 ft., Jan., *C. E. Parkinson* 1620 (type). There are also in the Kew Herbarium two sheets of this same variety: Hantawaddy District, Thanat chaung, Feb., *J. H. Lace* 2914; Amherst District, Natchaung Reserve, 100 ft., Feb., *J. H. Lace* 5580.

Miquel saw neither stipules nor flowers. In the present variety the stipules are ensiform, 6–15 cm. long, 1·2–1·75 cm. wide, covered outside with small tubercles from each of which arises a tuft of long, rufous hairs surrounded by short, greyish hairs, with minute, stellate hairs between the tubercles, glabrous within, with straight, parallel nerves, rather prominent on the inner surface, 10–12 at the base, reduced to about 4 upwards by conjunction and by splitting up into veinlets, the remainder anastomosing near the obtuse apex.

Parkinson's specimens lack flowers but Lace's have both flowers and fruit and the former agree with the description given by Pierre in Fl. For. Cochin. The calyx, however, is less tomentose and with shorter indumentum than is the case with specimens from Burma and Siam which seem to be the typical form.

It is curious that of the authors consulted only Miquel mentions stellate hairs though they are present in most specimens of the typical form and are probably concealed below the longer simple hairs in the others.

There is a very strong resemblance between *D. obtusifolius* Miq. and *D. Duperrianus* Pierre, and I am very doubtful that they can be maintained as separate species.

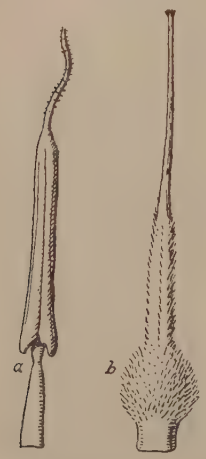

Fig. 1—*Dipterocarpus obtusifolius* Miq. var. *cuspidatus* Fischer

a. stamen x 8. *b*. pistil x 8.

Fig. 2—*Vatica astrotricha* Hance

a. stamen, front and side aspects x 10. *b*. pistil x 8.

Dipterocarpus angustialatus *Heim* in Bot. Tids. xxv (1903), 43. [Dipterocarpaceae].

This species was discovered during the Danish expedition to the Gulf of Siam on the island of Koh Chang. Heim had only fruiting specimens and the following amplification is based on flowering shoots.

A large tree attaining 150 feet in height. *Leaves* underneath with long, simple, appressed hairs mixed with short, stellate hairs on the midrib and primary nerves, the veins with short, stellate hairs. *Inflorescence* of supra-axillary, 5-flowered racemes, 8–10 cm. long; peduncle 2–3 cm. long, sulcate, more or less densely fulvous stellate-tomentose; rhachis jointed on the peduncle, terete, sulcate in the apical portion of each internode by the decurrent pedicels; pedicels 2–3 mm. long, grey stellate-pubescent. *Flowers* 4–5 cm. long and wide. *Calyx* turbinate, subfleshy, tube about 1 cm. long, 0·6 cm. wide at the mouth, obscurely 5-ribbed at the mouth, dotted with minute, grey or fuscous, stellate hairs without, within appressed white-hairy near the mouth, glabrous elsewhere, 2 of the lobes ligulate, 1·3–1·5 cm. long, apex rounded, densely grey-tomentose with simple (all ?) hairs on both sides, the other 3 lobes semicircular, about 3 mm. long, grey stellate-pubescent. *Petals* free, linear-spathulate, apex rounded, about 4·5 cm. long, 1 cm. wide, covered with minute, scaly, whitish, stellate hairs on the portions exposed in bud on the outside and to a lesser extent inside, the other parts glabrous, pale yellow to scarlet. *Stamens* about 30, 1–1·2 cm. long, glabrous; filaments 1–2 mm. long, flattened, broadening slightly upwards; anthers linear, 5 mm. long, shortly sagittate at the base, with rounded lobes, tapering to the finely aristate connective which is about as long as the anther. *Ovary* ellipsoid, 5-grooved, 4–5 mm. long, densely appressed grey-hairy, tapering into a narrow, subulate, hairy stylopodium, 3-celled, 6-ovuled; style filiform, glabrous, overtopping the stamens; stigma cup-shaped, minutely pubescent.

South Tenasserim. Thebyu chaung, 200 ft., Feb., *C. E. Parkinson* 1679.

Dipterocarpus Dyeri *Pierre* [Dipterocarpaceae].

Hitherto found only in Cochinchina.

South Tenasserim. Ngawun Reserve, 200 ft., Jan., *C. E. Parkinson* 1621.

Vatica astrotricha *Hance* in Jour. Bot. 1876, 241 [Dipterocarpaceae].

Previously known from Cambodia and Cochinchina. Hance's description was based on fruiting specimens only, the following, which differs a little from that of Guérin in the Fl. Gen. Indo-Chine, is of the flowers.

Flowers about 1·6 cm. long and wide. *Sepals* united at the base into a short tube above the torus, densely stellate-hairy without, densely simply-tomentose within, the 2 outer lobes oblong,

rounded, 4 mm. long, the 3 inner lanceolate, acute, slightly shorter than the outer. *Petals* oblanceolate-oblong, sometimes slightly falcate, apex rounded, 1·3 cm. long, 4 mm. wide, one margin straight, the other curved (in falcate petals one margin less curved than the other), slightly concave at the base, fuscous stellate-tomentose without on the part exposed in bud (the straighter side) and ciliate on that side and at the apex, elsewhere glabrous, white. *Stamens* 13, 1·5 mm. long; filaments flat, triangular, tapering to the oblong anther; anterior lobes of anther larger than the posterior, rounded at the base, connective produced into a short, bluntish mucro. *Pistil* 2·5 mm. long; ovary depressed-conical, broader than long, grooved, glabrous below, densely fulvous-hairy above; style terete, stout, slightly angled, slightly longer than the ovary; stigma peltate, minutely multi-lobed. (Fig. 2.)

South Tenasserim. Kyein chaung, 200 ft., Nov., *C. E. Parkinson* 1667.

Shorea Buchananii *Fischer* [Dipterocarpaceae]; *S. bracteolatae* Dyer affinis, bracteis minoribus stellato-tomentosis, floribus minoribus, antheris cuspidatis sine aristis, ovariis dense hirsutis differt.

A large tree. Twigs terete, brown, with scattered, small, round, corky warts, minutely stellate-pubescent upwards. *Leaves* oblong, elliptic or ovate-elliptic, base rounded, entire, midrib shallowly channelled above, strong and prominent below, nerves 12–17 pairs, prominent, regular, slightly curved and inarching just within the margin, secondary nerves numerous, close, regular, transverse between the primaries, visible above when dry, subprominent below, with minute reticulations between, margin entire, very narrowly cartilaginous, green and glabrous above, pale or olive-brown below, with scattered, minute, stellate hairs and dotted with minute, reddish-brown glands, 15–22·5 cm. long, 6–10 cm. wide. *Petioles* 1·2 cm. long, glabrous, rugose, brown. *Inflorescence* in axillary cymes, 8–14 cm. long; rhachis brown, terete below, more or less bluntly quadrangular upwards, more or less densely covered with grey, stellate tomentum. *Flowers* very shortly pedicellate, about 1 cm. long; bracts 2, persistent, oblong, obtuse, grey stellate-tomentose without, pubescent within, ciliate, 7 mm. long, 3–4 mm. wide. *Sepals* 5, imbricate, narrow lanceolate to broad ligulate, tomentose without, finely pubescent within, ciliate, blunt, 6 mm. long, 2–3 mm. wide, the 2 inner slightly shorter and narrower. *Petals* 5, generally twisted to the left in bud, slightly longer than the sepals, broadly strap-shaped or obovate, rounded, somewhat fleshy, tomentose on both sides. *Stamens* 15–20, quite glabrous, about 3 mm. long; filaments expanded at base, filiform above, anther linear-oblong, as long as or slightly longer than the filament, connective produced into a stout, acute, slightly curved cusp $\frac{1}{4}$–$\frac{1}{2}$ the length of the anther. *Ovary* much shorter than the stamens, subglobose, densely hairy; style slender, slightly overtopping the stamens, hairy below, glabrous above; stigma terminal,

undivided; stylopodium very short, glabrous. *Fruit* not seen. (Fig. 3.)

Mytkyina District: Tagwin, in evergreen forest, Nov., *C. E. Parkinson* 318 (type); *E. M. Buchanan* per *J. H. Lace* 20.

Fig. 3.—*Shorea Buchananii* Fischer stamen x 7.

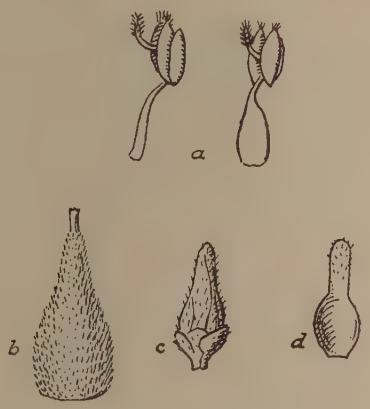

Fig. 4.—*Shorea argentea* Fischer
a. stamen x 7. *b.* pistil x 7.
c. bud very slightly enlarged.
d. petal natural size.

Shorea argentea *Fischer* [Dipterocarpaceae]; *S. obtusae* Wall. affinis, ramulis juventibus lepidotis, foliis majoribus, nervis paucioribus ad axillis eglandulosis, floribus majoribus, thecis antheris acutis differt.

Tree 80 feet high, branchlets brown, smooth; young twigs covered with minute, greyish, fringed, peltate scales. *Leaves* oblong or obovate-oblong, bluntly acuminate, narrowed into the petiole, 10–15 cm. long, 4·5–6·5 cm. wide, glabrous above, shining and nearly glabrous below, there being a very few simple and stellate hairs, midrib and primary nerves impressed above, rather prominent below, primary nerves 9 or 10 pairs, slightly curved, not anastomosing, secondary nerves numerous, obliquely transverse between the primaries, ultimate reticulations minute, axils of the nerves without glands. *Petioles* channelled above, laterally compressed, 2–2·5 cm. long, dotted with fringed, peltate scales and minute, simple and stellate hairs; stipules early deciduous, ovate, obtuse, 6–7 mm. long, densely covered with fringed, peltate scales without, less densely within, ciliate with simple hairs. *Inflorescence* of extra-axillary and terminal, sometimes leafy, panicled, unilateral cymes, rhachis sulcate and angled, covered with fringed, peltate scales, increasingly mixed upwards with simple hairs and increasingly whitish. *Buds* elongate ovate-lanceolate, obtuse, 1–1·3 cm. long, silvery silky. *Flowers* sessile or very shortly pedicelled; bracteoles very early deciduous (not seen). *Sepals* imbricate, broadly

ovate-cordate, subacute, the 3 outer 3 mm. long and as wide at the base, the 2 inner slightly smaller, all densely silvery silky-tomentose without, glabrous within, ciliate. *Petals* free, twisted or overlapping in bud either way, spoon-shaped, the basal portion suborbicular, concave, 5–6 mm. diam., the apical portion ligulate, obtuse, 8–9 mm. long, 2–2·5 mm. wide, parallel veined, veins about 13 at base and about 10 in the ligulate part, silvery with appressed silky hairs without, except at the very base, glabrous for the lower two-thirds, thinly and shortly silvery silky-hairy above within, yellow with a purplish smear at the base. *Stamens* 30–35, 2–3 mm. long; filaments flat below, tapering to a filiform apex, glabrous; anthers oblong, 0·5–1 mm. long, bases acute and slightly divergent, posterior loculi with a fringe of whitish hairs near the apex, connective produced into a setose, curved mucro nearly as long as the anther, emerging at a right angle from between the two posterior loculi at about their middle and then bent upright. *Pistil* about 4 mm. long; ovary ovate, slightly grooved at the base, narrowed gradually into the subulate stylopodium, densely grey-hairy, as is the stylopodium; style short, glabrous, trigonous at the apex with 3 minute stigmatic teeth. *Fruit* not seen. (Fig. 4.)

South Tenasserim. Near Negya Daung Pass, 600 ft., Feb., *C. E. Parkinson* 1684.

Shorea cinerea *Fischer* [Dipterocarpaceae]; sectioni *Brachypterae* (sensu Brandis) affinis, ab omnibus hujus sectionis specibus gemmis majoribus ellipsoideis, antheris linearibus, connectivis brevibus mucronatis differt.

"A very large tree with dark-brown furrowed bark" (fide Parkinson). Branchlets pale-brown, glabrous; twigs dark-brown, glabrous, striate, with small, scattered lenticels. *Leaves* linear-oblong to ovate-oblong, bluntly acuminate, base rounded, rarely narrowed, 15–25 cm. long, 4·5–7·5 cm. wide, glabrous, minutely scurfy-scaly below, midrib prominent, raised below, primary nerves about 15 pairs, slender, distinct on both surfaces, hardly raised below, ascending, nearly straight and then following the margin, not anastomosing, axils eglandular, secondary nerves numerous, transverse between the primaries, ultimate reticulations fine and distinct on both surfaces. *Petioles* channelled above, 1·5–2·5 cm. long, glabrous. *Inflorescence* of axillary, sometimes terminal and leafy, panicles, solitary, shorter than the leaves; rhachis more or less quadrangular in section, minutely hoary stellate-pubescent. *Buds* ellipsoid, blunt, about 5 mm. long, 4 mm. wide. *Flowers* sessile or very shortly pedicelled, about 7 mm. across, with 2 minute, cinereous-tomentose bracteoles. *Sepals* very shortly connate at base, segments ovate-lanceolate, acute, subequal, 1·5–2 mm. long, shortly cinereous-tomentose without, glabrous within. *Petals* overlapping generally to the right in bud but sometimes to the left, very shortly united at the base, lobes oblong, apex rounded or truncate, about 6 mm. long, 4 mm. wide, 8-veined, shortly cinereous-tomentose without on the

part exposed in bud and less densely so on the part concealed, glabrous or nearly so at the base within, increasingly cinereous pubescent towards the apex, white. *Stamens* 15, about 4·5 mm. long; filaments filiform above, subrotund or oblong below, glabrous, anthers linear, connective produced into a short mucro, base shortly sagittate with a few short bristles from each point, about 3·5 mm. long, sparsely, minutely hairy, the dorsal surface minutely punctate. *Ovary* depressed-globose, about 1 mm. long, densely grey-brown-velvety; stylopodium 0; style terete, slightly longer than the ovary, cinereous-pubescent at the very base, otherwise glabrous, slightly enlarged just below the stigma; stigma cup-shaped, margin minutely 5-toothed. *Fruit* not seen. (Fig. 5.)

South Tenasserim. Thebyu chaung, 600 ft., Feb., *C. E. Parkinson* 1681.

Fig. 5—*Shorea cinerea* Fischer stamen x 7.

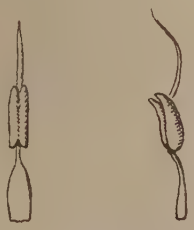

Fig. 6—*Shorea farinosa* Fischer stamen front and side aspects x 6.

Shorea farinosa *Fischer* [Dipterocarpaceae]; *S. hypochrae* Hance affinis, ramulis glabris, foliis longioribus angustioribus acutioribus, in nervorum axillis domatis presentibus, floribus subsessilibus, petalis albo-sericeis differt.

A tree reaching 150 feet high. Branchlets grey, terete, glabrous, abundantly, minutely lenticellate; twigs slightly angular or compressed, dark-brown, glabrous. *Leaves* oblong or oblong-lanceolate, rounded or acute, narrowed to a rounded base or truncate, 8–16 cm. long, 4–5·5 cm. wide, glabrous except the midrib which is minutely pubescent, minutely mealy on the nerves and veins below, midrib impressed above, very prominent below, primary nerves 15–18 pairs, prominent below, regular, slightly curved, inarched and anastomosing near the margin, with small hairy domatia in the axils, secondary nerves transverse between the primaries, very slender, ultimate reticulations minute. *Petioles* terete, narrowly channelled above, 2–3·5 cm. long, dark-brown, glabrous, slightly rugose. *Inflorescence* of axillary and terminal one-sided racemes and cymes forming large, terminal panicles by the fall of the leaves, angular and somewhat compressed, very minutely pubescent. *Flowers* rather distant, sessile or nearly so in bud; pedicel lengthening later but always very short, ridged, velvety stellate-tomentose. *Sepals* free, ovate-cordate, 5·5–6·5 mm. long, diminishing in size

inwards, 2 outer unequal at base, rounded at the apex, 3 inner increasingly acute, all densely velvety with stellate hairs without and ciliate, within glabrous at the base, pubescent towards the apex. *Petals* broadly ovate-oblong, inequilateral, apex obtuse, 1·2–1·3 cm. long, about 0·7 cm. wide, 15-veined at the widest part, clothed with long, whitish, silky hairs on the part exposed in bud and ciliate on the same margin, glabrous elsewhere. *Stamens* 22–25, 6–7 mm. long, filaments flat, ovate below, shortly filiform above; anthers linear-oblong, 1·5 mm. long, rounded at the base, loculi separate and acute at the apex, connective prolonged into a seta 2·5–3 mm. long. *Pistil* 5·5–6 mm. long; ovary ellipsoid, narrowed into the subulate stylopodium and style, ovary and stylopodium minutely hairy; style glabrous, about as long as the rest of the pistil; stigma 3-lobed. *Fruit* not seen. (Fig. 6.)

South Tenasserim. Ngawun Reserve, 300 ft., Jan., *C. E. Parkinson* 1610 (type); Theinkun chaung banks, 100 ft., Feb., *C. E. Parkinson* 1919.

Hopea oblongifolia *Dyer* var. **grandis** *Fischer* [Dipterocarpaceae]; a forma typica foliis et floris longioribus differt.

A tree attaining 80 feet in height; branchlets terete, glabrous, brown; young twigs somewhat compressed, glabrous, dark. *Leaves* oblong, acuminate, base rounded, inequilateral, 15–30 cm. long, 6–10 cm. wide, quite glabrous, midrib prominent below, primary nerves generally 10 pairs, distant, prominent below, erect, slightly curved, not anastomosing, axils glandless, secondary nerves numerous, slender, transverse between the primaries, ultimate reticulations minute, margin very narrowly cartilaginous. *Petioles* narrowly channelled above, 1·5–2 cm. long, glabrous. *Inflorescence* of axillary, one-sided, racemose cymes or panicles, shorter than the leaves, solitary or 2 together, with several minute, triangular, tomentose scales at the base; rhachis and its branches glabrous, slightly angular when dry, with minute, triangular, hairy bracts at the divisions; branches of the rhachis 5–8-flowered, with a minute, scaly, ciliate, puberulous bracteole at the base of each pedicel; pedicels stout, about 2 mm. long, puberulous. *Buds* ovate, subacute. *Flowers* about 1·3 cm. long and wide. *Sepals* free, ovate, obtuse, 5 mm. long, the 2 outer about 4 mm. wide at the base, the other 3 progressively narrower, the 2 outer greyish-tomentose without and on the apical third within, the lower part glabrous, the 3 inner more thinly tomentose without with a narrow, glabrous, whitish margin, quite glabrous within, all 5 more or less ciliate, the inner tending to be eciliate towards the base. *Petals* free, overlapping to the left or right, oblong, slightly falcate and inequilateral, apex rounded, the margins near to it more or less erose, about 1·2 cm. long, 0·4 cm. wide, grey silky-pubescent without on the portion exposed in bud and ciliate on that margin, glabrous elsewhere. *Stamens* 15, nearly 3 mm. long including the setaceous connective, quite glabrous, filament expanded, wedge-shaped, very shortly filiform at the apex; anther suborbicular,

about half the length of the filament; connective produced into a slender seta about as long as the filament. *Pistil* 5 mm. long; ovary ellipsoid, glabrous below, thinly hairy in the upper half, slightly narrowed into the stylopodium, 3-celled, 6-ovuled; stylopodium stout, columnar, slightly widened near the apex and then suddenly narrowed into the style, thinly hairy below, glabrous above, about twice as long as the ovary; style short, glabrous; stigma slightly swollen, cup-shaped. *Fruit* not seen. (Fig. 7.)

South Tenasserim. Thebyu chaung, 600 ft., Feb., *C. E. Parkinson* 1685.

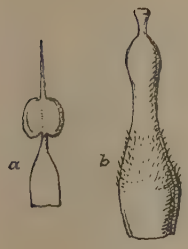

Fig. 7—*Hopea oblongifolia* Dyer var. *grandis* Fischer
a. stamen x 8. *b*. pistil x 7.

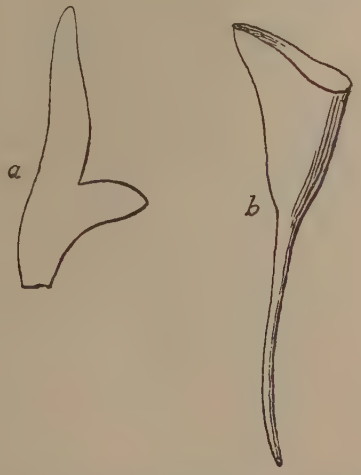

Fig. 8—*Impatiens sarissiformis* Fischer
a. wing x 2. *b*. lip x 2.

Hibiscus Parkinsonii *Fischer* [Malvaceae]; *H. macrophyllo* Roxb. affinis, foliis valde minoribus subtus pallido-tomentosis, 3–5-glandulosis petiolis valde minoribus brevibus pubescentibus, stipulis minoribus externe glabris differt.

A slender tree 40 feet high; twigs terete, ringed with the scars of the fallen stipules and marked with large, horseshoe-shaped, close-set leaf-scars, minutely hairy with dark, brittle hairs. *Leaves* orbicular, suddenly caudate, base deeply cordate with a narrow sinus, 6–9 cm. diam., caudicle slender, acute, 1·5–1·7 cm. long, glabrous and slightly mealy above when young, densely felted with cream-coloured, stellate tomentum below, ciliate, 7–9-ribbed, the 3 middle ribs, and sometimes the next pair, bearing below a long, naked gland, that of the midrib placed at about the middle, of the next 2 at about one-third of its length above the base, and of the next pair, if present, still nearer the base, primary nerves 3–4 pairs from the midrib in its upper half and 3 or 4 from the

outer side of the other ribs, secondary nerves transverse, ultimate reticulations fine, margins shallowly crenate-undulate. *Petioles* terete, slender, slightly enlarged at both ends, 3–5 cm. long, glabrous near the base and increasingly creamy stellate-pubescent upwards; stipules shortly and broadly petioled, linear-lanceolate, somewhat falcate, acute, 4–5 cm. long, glabrous without, covered with long, creamy, simple, silky hairs within. *Flowers* axillary, solitary; pedicels 3–5 cm. long (in fruit) bearing 2 deciduous bracts which leave an annular scar at or above the middle, articulated just above the scar, the pedicel below the scar slender, enlarging very slightly upwards, glabrous, above the articulation stout and markedly enlarged upwards (at least in fruit) and densely fulvous stellate-tomentose. *Bracteoles* 10, free, linear, obtuse, 1·3–1·5 cm. long (in fruit), fuscous stellate-hairy along the middle without and glabrous along the margins, covered with long, simple hairs along the median line within and with short, brownish hairs along the margins. *Calyx* shortly turbinate below with 5 lanceolate, obtuse lobes 3–4 times as long as the tube, about 2 cm. long (in fruit), fuscous stellate-tomentose without, covered with long, simple hairs within. *Petals*, *stamens* and *pistil* not seen. *Fruit* 5-valved, valves woody, shortly, finely aristate, densely shaggy with long, fuscous hairs without, glabrous and shining within, slightly shorter than the calyx; seeds several in each cell, ear-shaped in outline, about 4 mm. long, densely shaggy with long, rufous hairs along the margins, the faces glabrous, black, minutely papillose with reddish-brown papillae disposed in irregular, discontinuous, concentric lines.

South Tenasserim. Mai nam wat, Theinkun chaung, 400 ft., Feb., *C. E. Parkinson* 1909.

Hibiscus flavotrichus *Fischer* [Malvaceae]: *H. tiliaceo* Linn. affinis, foliis ovatis supra pubescentibus, bracteolis 6 fere liberis, antheris haud in parte inferiore presentibus differt.

A slender tree 40 feet high. Branchlets brown, striate, glabrescent; twigs densely fuscous stellate-tomentose. *Leaves* broadly ovate, acute, base truncate, emarginate or shallowly cordate, 5–13 cm. long, 4–8·5 cm. wide, when dry purplish above, dotted with minute, stellate hairs, densely so on the ribs and nerves, densely buff or creamy stellate-tomentose below with scattered, rather larger, fuscous, stellate hairs, pellucid-dotted, ribs 3, the middle one bearing below a narrow gland a little above the base, ribs and nerves slightly impressed above, prominent below, primary nerves 4–5 pairs from the midrib and about 6 pairs from the outer side of the lateral ribs, secondary nerves transverse, reticulations obscure, margins crenulate. *Petioles* terete, striate, 1·5–3·5 cm. long, fuscous stellate-tomentose. *Stipules* 2, linear-ensiform, acuminate, 6–8 mm. long, felted with fuscous, stellate tomentum. *Buds* ovate, acuminate. *Flowers* axillary, solitary, 5–6 cm. diam.; pedicel 3–4 cm. long, not jointed, striate, felted with yellowish-

green, stellate tomentum; bracteoles 6, very shortly united at the base and to the base of the calyx-tube, linear or ovate-lanceolate, acute, 7–8 mm. long, felted with short yellowish-green, stellate tomentum on both faces. *Calyx* united below into a campanulate tube, 5–6 mm. long, lobes ovate-lanceolate, acute, 1–1·2 cm. long, felted with yellowish-green, stellate tomentum without, brown and glabrous within the tube and on the lower half of the lobes, the margins and upper halves felted with short, grey, stellate tomentum, lobes thickened near the margins. *Petals* broadly obovate, about 3·5 cm. long, thin, veined, dotted outside with fine, white, crisped, stellate hairs and coarser yellow, stellate hairs, glabrous within except for a patch of brown, mealy hairs at the base, margin white-ciliate for about 1 cm. from the base; mauve. *Stamens* united into a slender column 3–4 cm. long, antheriferous along the upper half, shortly brown-pilose, apex toothed; free portion of filaments filiform, 2–4 mm. long, glabrous; anthers numerous, pollen grains globose, muricate. *Ovary* densely covered with long, yellowish hairs; styles dividing into 5 branches, shortly exserted from the staminal column, stigmas globose, small. *Fruit* 5-valved, valves woody, acuminate, not aristate, slightly shorter than the calyx, densely clothed without with turgid, curved, acicular, orange, stellate hairs. *Seeds* 1 (?) in each cell, reniform, smooth, 3–4 mm. long, densely clothed with long, warm-buff, silky hairs.

South Tenasserim. Chaungnaukpyan, 300 ft., Jan., *C. E. Parkinson* 1640.

Hibiscus fragrans *Roxb.* var. **glabra** *Fischer* [Malvaceae]; a forma typica ovariis glabris differt.

A climber (always?); branchlets and twigs terete, grey or fuscous stellate-tomentose, the younger parts almost floccose. *Leaves* ovate-cordate, acuminate, basal lobes rounded, sinus wide, 8–13 cm. long, 6–9 cm. wide, 7–ribbed, ribs prominent on both surfaces, primary nerves 3 pairs from the midrib above the middle and 2–3 from the outer side of the lateral, all inarching and anastomosing a little within the margin, secondary nerves distinct, rather irregular, hoary stellate-pubescent above, densely so on the ribs and nerves on both sides, thinly stellate-pubescent or glabrescent elsewhere below, margins crenate- or undulate-denticulate. *Petioles* 3–6 cm. long, densely grey or fuscous stellate-tomentose. *Stipules* (not seen) early deciduous leaving linear scars. *Flowers* 1–3 together in the axils of the (generally reduced) upper leaves and forming terminal, leafy panicles, 4·5–6 cm. diam.; pedicels slender, 3·5–4 cm. long, jointed a little below the flower, densely grey or yellowish-green stellate-tomentose. *Involucre* 1·2 cm. long, of 5 bracteoles united into a cup for about half their length, the free lobes ovate, acute, 5-veined, dark-brown (at least when dry), thickly dotted with soft, hoary or fuscous, stellate hairs without, less densely within, ciliate. *Calyx* 1·5 cm. long, united into a campanulate cup for about half its length, the 5 lobes ovate, sub-

acute, 5-veined, densely and softly hoary or fuscous, stellate-tomentose on both sides in the lower half, more sparingly so on the lobes, mixed outside and especially on the lobes with stout, simple, glandular (?), dark, often hooked, hairs from bulbous bases. *Petals* united at the base into a short tube enclosing the ovary, obovate, rounded, much contracted, almost clawed, just above the tube, 2·5–3 cm. long, 1·2–2 cm. wide, ciliate with stellate hairs for a distance of 2–3 mm. above the tube, with scattered, whitish or fuscous, small stellate and larger 3-armed hairs outside, mainly on the side exposed before expansion, glabrous within, about 15–veined; pink. *Staminal column* united with the corolla-tube, free portion about 1 cm. long, mouth truncate and ciliate with a few simple hairs, abundantly antheriferous in the upper half, stout, sulcate, with a few stellate hairs at the very base; anthers oblong, 2 of the cells shorter than the other 2; pollen grains globose, strongly muricate. *Ovary* conical, 4–5 mm. long, glabrous, minutely papillose, 5-celled; ovules reniform, glabrous; style slender, glabrous, divided above the staminal column into 5 stout, clavate, glabrous arms; stigmas capitate, glabrous. *Fruit* not seen.

Myitkyina District. Pinbaw, Nov., *C. E. Parkinson* 364.

I cannot separate this specimen from *H. fragrans* Roxb. by any other constant character than the glabrous ovary. The Wall. Cat. No. 1911A quoted under this name in the Fl. Br. India, has a glabrous ovary as well as all those dissected from specimens identified as of that species in the Herb. Kew., including that from a flower on a specimen collected by Jenkins in Assam which has as well a densely tomentose capsule! Guérin in the Fl. Gen. Indochine states that the ovary is tomentose (*ovaire velu*).

Some of the species identified as *H. fragrans* Roxb. in the Herb. Kew. are described on the labels as climbers; it seems probable that, as in many other species, the plant is a facultative climber on occasion.

Neesia synandra *Mast.* [Malvaceae].

Hitherto known only from the Malay Peninsula.

Burma. South Tenasserim, Tenasserim River, Kanoungyi, at about sea-level, Feb., *C. E. Parkinson* 1981.

Elaeocarpus floribundus *Bl.* [Elaeocarpaceae].

None of the authors describing this species has mentioned the round, dark glands on the under side of the leaves though these are present more often than not and in specimens from all localities. Some have also omitted mention of the peculiar pustules on both sides of the leaves which offer a nearly invariable and characteristic feature.

Sloanea Kerrii *Craib* [Elaeocarpaceae].

Known so far only from Siam.

Tavoy. Nwalabo, 3100 ft., July, *R. N. Parker* 2307.

Impatiens sarissiformis *Fischer* [Geraniaceae]; *I. Wattii* Hook. f. affinis, foliis, sepalis, petalisque omnibus angustioribus differt.

A slender herb 3–5 dm. high; stem decumbent below, rooting, roots fibrous; stem purplish above, striate when dry, nodes slightly tumid; quite glabrous except for the perianth. *Leaves* alternate, linear, acuminate, base tapering and decurrent to the base of the petiole, stipular glands absent, margin distantly crenate, crenatures minutely setigerous, sometimes very shallow, 4–10 cm. long, 0·3–0·7 cm. wide, a few leaves from axillary buds in the middle of the stem much shorter and lanceolate or spathulate. *Peduncles* erect, from the upper axils, very slender, 2–3-flowered, nodes slightly tumid, 2–4 cm. long when in flower; bracts minute, deciduous. *Flowers* deep yellow; pedicels capillary, about 1 cm. long in flower, lengthening in fruit. *Sepals* 3, lateral oblong-falcate, apiculate, 4·5 mm. long, 2 mm. wide, posterior infundibuliform, narrowed into a long, slender, straight spur, the funnel-shaped portion about 1 cm. long and 0·9 cm. wide at the mouth, the spur 2 cm. long. *Petals* 3, anterior suborbicular, slightly convex, apex rounded, retuse or shallowly 2-lobed, 8 mm. long, wings linear-lanceolate, subacute, 2 cm. long, with a broad, falcate, subacute lobe 0·7 cm. long; the lip and petals with minute, scattered hairs, at least in bud. *Ovary* narrow-ovate, 3–4 mm. long; ovules numerous, ellipsoid, glabrous. *Fruit* (immature) narrowly clavate. (Fig. 8.)

Myitkyina District. Pidaung chaung, Dec., *C. E. Parkinson* 373, "Growing near water."

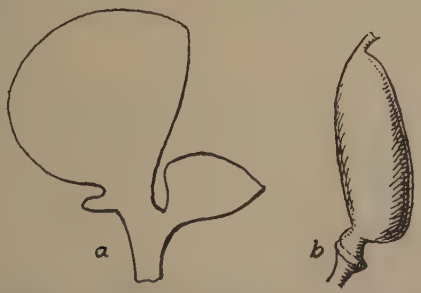

Fig. 9—*Impatiens Parkinsonii* Fischer
a. wing x 3½. b. fruit x 3.

Impatiens Parkinsonii *Fischer* [Geraniaceae]: *I. acuminatae* Benth. affinis, pedunculis longioribus, bracteis angustioribus, floribus minoribus differt.

A glabrous, aquatic herb 2–3 dm. high; roots fibrous; stem rooting near the base, glabrous, sulcate when dry, more or less papillose upwards. *Leaves* alternate, lanceolate to oblanceolate, acute, apiculate, base finely tapered and decurrent to the subamplexi-

caul base of the petiole, stipular glands absent, midrib broad, nerves 6–8 pairs, ultimate reticulations minute, rounded, margins more or less crenate, crenatures minutely apiculate, 5–8 cm. long, including the petiole, 1–2 cm. wide. *Peduncles* solitary in the upper axils, erect, longer than the leaves, purplish upwards, 6–13-flowered. *Flowers* racemose, erect, deep-purple; bract at the base of the pedicel persistent, ovate, lanceolate, acuminate, veined, 6–7 mm. long, purplish; pedicels capillary, about 1·5 cm. long, purple. *Sepals* 3, the 2 lateral ovate-rotund, inequilateral, apiculate, base rounded, 5-veined, 6–7 mm. long, the posterior ovate, concave, a little larger than the lateral, acute, narrowed into a stout, incurved spur about 2 cm. long. *Petals* 3, anterior obovate-rotund, 8 mm. long, wings long-clawed, limb obovate, 1 cm. long with a short posterior ligulate auricle and a large, anterior, falcate, acute one 5 mm. long. *Ovary* ellipsoid. *Fruit* ellipsoid, inequilateral, slightly furrowed when dry, about 1 cm. long; seeds numerous, egg-shaped, 1–1·5 mm. long, furnished with long, delicate, spirally wound, white hairs. (Fig. 9.)

Myitkyina District. Namti chaung feeder, Dec., *C. E. Parkinson* 407 (type); Pidaung Range, Dec., 500–800 feet, *E. M. Buchanan*, "Growing in water."

Turraea pumila *Benn.* [Meliaceae].

Previously reported from Java.

Maymyo Plateau, 2500 ft., June, *C. E. Parkinson* 1148. Northern Shan States, Jan., *J. H. Lace* 5216.

LVII.—ON THE HISTORY OF NEPENTHES LAEVIS.

J. M. Macfarlane.

This species has had a somewhat chequered history. United with *N. gracilis* by Korthals, and in part also by Miguel (Fl. Ned. Ind. 1855) it was first rather imperfectly described as *N. laevis* by Lindley from plants raised by and sent out by Veitch to Botanic Gardens. The present writer minutely studied it at the Royal Botanic Garden, Edinburgh, in 1881, and at Veitch's Nursery in 1884. But its many points of resemblance to *N. gracilis* caused him, in want of sufficient native material, to unite it with the latter species in the "Pflanzenreich." More abundant material fully proves its distinctness. The nonciliate wings, the deeply decurrent leaf bases, the orbicular lid with few perithecioid honey glands, the discrete exposed digestive glands, and the very short staminal column with few anthers are diagnostic. A revised description is given below.

N. laevis *Lindl.* in Gard. Chron. (1848) ii, 655; Veitch, Hort. Veitchii (1906) 302; Macfarl. Pflanzenreich iv, 3 (1908) 58.

Plant slender, diffuse branching, branches climbing or at times creeping and rooting, then with nodal clusters of small pitchered

leaves on short branch-spurs. *Stem* triangular or subrotund in section, 8 dm. or more long by 3–4 mm. thick, when young ferrugineo-villose, soon glabrous. *Leaves* 7–15 cm. long, 1·5–3 cm. wide, lanceolate, sessile, base $\frac{2}{3}$–$\frac{3}{4}$ amplexicaul, deeply decurrent-attenuate, subcoriaceous, glabrous, attenuate upward into tendril, longitudinal nerves 5–6 pairs, disposed as in *N. gracilis* all springing from leaf base, transverse veins ascending radiate; tendril 6–20 cm., delicate, slightly thickened toward pitcher, sparsely villose; lower pitchers small, ventricose, with ciliate wings, upper ventricose below, cylindric above, green or faintly pink-streaked, finely brown-spotted, wings 2-ciliate cords extending from base to mouth, mouth circular, slightly oblique; peristome narrow cylindric, finely ridged, lid cordate-orbicular, 2–2·5 cm., glabrous without, within with few scattered deeply sunk perithecioid glands, spur 3–4 mm., sparsely pubescent, pitcher within to $\frac{1}{2}$–$\frac{3}{4}$ depth glaucous-purple, smooth conducting, below with discrete exposed glands. *Inflorescence*: peduncle short, 1–3 cm., rhachis 10–12 cm. both ferrugineo-pubescent, pedicels slender, uniflorous, rarely biflorous below, ebracteolate. *Sepals* 4, elliptic to broad ovate, without puberulous to subglabrous, within densely glandular; male flowers with staminal column $\frac{1}{3}$ length of sepals, glabrous, anthers 6–8, female flowers with elliptic pubescent ovary of 4 rarely 3 carpels, stigmas 4–3 mm. thick. *Fruit* 2–2·5 cm. long, lanceolate, lobes 4 rarely 3, almost glabrous, with bilobed apex: seeds 14–15 mm. long, pale yellow.

Malay Peninsula: Singapore, Changi, *Ridley*! Malay Islands: Borneo, *Korthals* 7165! *Lowe*!; Bangarmassing, *Motley* 554!; Bocutok, *Winkler* 3277!; Jesselton, Kinabalu, *Clemens* 9588! 9687!; Banka, *Kurz* 1465!.

LVIII.—ADDITIONS TO THE FLORA OF MALAYA. H. N. Ridley.

Xylopia rotundata *Ridl.* n. sp. [Anonaceae]; affinis *X. fuscae* Maing., sed foliis obovatis apicibus rotundatis, floribus majoribus, petalis linearibus acutis.

Arbor 13 metralis: *foliis* obovatis, apicibus rotundatis basibus attenuatis, tenuiter coriaceis, glabris, nervis tenuibus 7-paribus, 8 cm. longis, 4·4 cm. latis; petiolis 1·5 cm. longis; *floribus* singulis extra-axillaribus; *pedunculis* 8 mm. longis; *bractea* reniformi-rotundata 5 mm. lata; *pedicello* 5 mm. longo; omnibus pubescentibus; *sepalis* 3, late oblongis rotundatis 1 cm. latis pubescentibus; *petalis* 6 linearibus acutis basibus rotundatis dilatis pubescentibus, 2·5 cm. longis, superne 3 mm. latis; *staminibus* ad 30 cuneatis, apicibus planis subovatis; *ovariis* ad 4 pubescentibus.

Borneo. Siol, Kuching, on low-lying ground and slopes, *Foxworthy* 0357.

Tree, 40 feet tall, girth at breast-height 3 feet. Wood moderately hard, heartwood and sapwood distinct. Used for house-construction and dugouts. Native name: Pelan.

Hydnocarpus Humei *Ridl.* n. sp. [Flacourtiaceae]; affinis *H. Wrayi* King, sed floribus multo minoribus foliisque longe caudatis tenuibus.

Arbor 3 metralis glabra; *foliis* chartaceis ellipticis oblanceolatis longe cuspidatis, basibus attenuatis cuneatis, marginibus undulatis vel crenulatis vel versus apices parce serratis, nervis 8-paribus tenuibus arcuantibus elevatis, 18–20 cm. longis, 6–7 cm. latis (cuspide 3 cm. longo); petiolis 1 cm. longis; *floribus* masculis aggregatis in 2 ramis crassis in pedunculo crasso, panicula in toto 5 mm. longo, pedicellis crassiusculis 1 mm. longis; *sepalis* 4 rotundatis marginibus ciliatis 3 cm. longis; *petalis* 5, multo brevioribus, staminibus vix superantibus oblongis truncatis hirtis, intus glabris fuscis; *staminibus* 15, filamentis brevibus longe albo-pilosis; antheris oblongis, loculis connectivo disjunctis. *Flores feminei* et *fructus* ignoti.

Selangor. Klang Gates, *Hume* 7256.

Tree 10 feet tall. Flowers white. I know nothing very like this species, the foliage seems very variable, the edge sometimes quite entire and sometimes coarsely serrate in the upper third. The flowers resemble those of *H. Wrayi*, but are very much smaller.

Shorea chrysophylla *Ridl.* n. sp. [Dipterocarpaceae]; species *S. mecistopteryci* Ridl. affinis, sed foliis subtus aureo-pubescentibus distinctis.

Arbor 17 metralis ramulis scabrido-furfuraceis; *foliis* coriaceis oblongis obtusis, basibus cordatis, superne costa nervisque glabris, subtus aureo-pubescentibus velutinis, nervis 18-paribus cum costa elevatis, nervulis transversis copiosis parallelis paulo undulatis, reticulationibus minutis conspicuis, 27 cm. longis, 11·5 cm. latis; petiolis 5 cm. longis validis aureo-velutinis; *perulis* lanceolatis obtusis pubescentibus 2 cm. longis, 1 cm. latis, *paniculis* pauci-ramosis 1·2 cm. longis, ramis gracilibus pubescentibus; *bracteis* anguste oblongis 5 mm. longis; *pedicellis* 3 mm. longis; *sepalis* lineari-oblongis obtusis pubescentibus, tribus 5 mm. longis 2 minoribus; *petalis* et *staminibus* invisis; *ovarium* glabrum, stylopodio dilatato longiusculo.

Borneo. Pintasan, Tipuas, Tankulap, 600 feet alt., 13th Oct. 1925, *Raphael B. Cabiling* 1, 6 (type).

Tree 50 feet tall, 40 inches in diameter. Leaves golden-velvety on the back. Flowers white, minute. Fruit (very young) reddish. Native names: Kawang Bukit; Kawang jantan.

A very distinct plant in the golden velvety underside of the leaves. Unfortunately all the specimens are in young fruit, the petals and stamens gone, and no fully developed fruit.

Sterculia microphylla *Ridl.* n. sp. [Sterculiaceae]; *S. parvifoliae*

Wall. affinis, sed foliis ovatis cuspidatis nec lanceolatis, floribus angustis infundibuliformibus differt.

Arbor 8–10 metralis glabra, ramis pallidis suberosis; *foliis* ovatis cuspidatis, basibus rotundatis tenuiter coriaceis nitidis, nervis 3-paribus inarcuantibus, 7-9 cm. longis, 3·5–4 cm. latis; petiolis gracilibus 4 cm. longis; *racemis* gracillimis puberulis 10 cm. longis; *floribus* rubris, dissitis; *pedicellis* filiformibus 1 cm. longis puberulis; *sepalis* tubo infundibuliformi hirto 1 cm. longo, lobis filiformibus hirtis aequilongis apicibus connatis; *androecio* brevissimo, stipite basi incrassato ad apicem attenuato, antherarum capitulo nutante, antheris 10 parvis oblongis. *Flores feminei* et *fructus* non visi.

Perak. Kali, Kuala Kangsar, *Haniff* 14943.

This curious species with its small, round, long-cuspidate leaves, and very slender racemes of scattered spider-like flowers is not closely allied to any species.

Sterculia Holttumii *Ridl.* n. sp. [Sterculiaceae]; *S. Scortechinii* King affinis, sed foliis majoribus oblongis haud punctatis.

Arbor 17 metra alta, glabra; *foliis* coriaceis oblongis obtusis vel breviter cuspidatis basibus latis obtusis, nervis subtus elevatis 7-paribus arcuantibus, nervulis subparallelis paucis, reticulationibus minutis, 11–14·5 cm. longis, 6 cm. latis; petiolis 2 cm. longis; *panicula* ramis 3 cm. longis; *pedicellis* 3 mm. longis: *sepalorum* tubo campanulato, ovoideo 2 mm. longo, lobis linearibus hirtis 2 mm. longis apicibus connatis: *androecii* stipite erecto tereti cylindrico, antheris 10 in seriebus duobus superpositis.

Trengganu. Pulau Kapas, *Holttum* 15214.

Tree 50 feet high; by the shore.

Ilex nitens *Ridl.* n. sp. [Ilicineae]; species *I. epiphyticae* King affinis, foliis integris, floribus in racemis brevibus, corollae tubo distincto staminibus longioribus.

Arbor?: *foliis* oppositis crasse coriaceis nitidis epunctatis oblongo-ellipticis obtusis vel elliptico-lanceolatis acutis superne costa nervisque depressis, subtus costa elevata; nervis 6-paribus indistinctis paullo elevatis, 9–9·5 cm. longis, 3·5–4·2 cm. latis; petiolis validis 1 cm. longis: *racemis* brevibus axillaribus 1 cm. longis; *bracteis* ad bases pluribus ovatis coriaceis 1 mm. longis: *floribus* 3 mm. longis circiter 6; pedicellis 2 mm. longis; *bracteolis* caducis oblongis obtusis: *sepalis* 4 ovato-rotundatis pubescente-ciliatis; *corolla* longiore, tubo sepalis aequilongo, lobis 4 rotundatis; *staminibus* 4, petala superantibus, filamentis teretibus, antheris subglobosis; *stylo* breviore, stigmate parvo pulviniformi

Pahang. Gunong Benom, 6000 feet alt., 7th Aug. 1925 (F.M.S. Mus. Coll.).

Allomorphia longisetosa *Ridl.* n. sp. [Melastomaceae]; species nullo arcte affinis, foliis oblanceolatis basibus obtusis, petiolis longe rufo-setosis; staminibus obtusis brevibus in appendiculatis distinctis.

Suffrutex; *caule* lignoso 12 cm. longo, 5 mm. crasso: *foliis* terminalibus oblanceolatis subacutis basibus obtusis subcordatis, marginibus crenato-serratis, superne sparse setosis, subtus in costa et nervis nervulisque setosis, nervis 2-paribus, nervulis transversis parallelis ad 30-paribus, 16–23 cm. longis, 5–8 cm. latis; petiolis validis 4 cm. longis, longe rufo-setosis, setis 1 cm. longis: *racemo* gracili 8 cm. longo glabro, rachide angulato; *floribus* in umbellis lateralibus parvis viride-flavis, pedicellis 5 mm. longis; calyce campanulato 1 mm. longo, 6-dentato: *petalis* minutis lanceolatis acutis: *staminibus* 8, filamentis brevibus filiformibus, antheris longioribus oblongis apicibus et basibus 1 mm. longis; *stylo* gracili 5 mm. longo; *capsula* rotundata, 3 mm. longa.

Johore. Gunong Pantai, 1500 feet alt., on rocks on ridges ; one foot high; flowers small, yellowish-green; *Holttum* 15050.

The foliage of this plant resembles that of *Pomatostoma* but the inflorescence is that of *Allomorphia*. The stamens, however, are short and the anthers bluntly oblong, not beaked as in most Allomorphias.

Hedyotis hirta *Ridl.* n. sp. [Rubiaceae]; herba *H. congestae* R. Br. similis, sed undique hirta, foliisque tenuioribus et subsessilibus, nervis valde inconspicuis.

Herba 90 cm. alta, basi repente; *caule* subangulato pubescente: *foliis* crassiusculis lanceolatis vel oblongo-lanceolatis superne glabris, subtus hirtis, 9 cm. longis, 3 cm. latis, nervis obscuris; petiolis 3 mm. longis, hirtis: *floribus* dense congestis in axillis pluribus brevissime pedicellatis; *bracteis* lanceolatis acuminatis brevibus hirtis; *calyce* oblongo-ovoideo lobis triangularibus acuminatis undique hirto: *corolla* 5 mm. longa, tubo gracili, lobis 4 linearilanceolatis acutis, capillis extus albis ad apices: *staminibus* 4, petalis paullo brevioribus, filamentis gracilibus glabris, antheris linearibus: *stylo* paullo breviore, stigmatibus 2 brevibus recurvis: *capsula* oblongo-ovoidea hirta, crustacea (in sicca), seminibus paucis angulatis nigris.

Southern Siam. Pungah, *Haniff & Nur* 3871.

This is quite of the style of the common *H. congesta*, but the leaves are thinner and the nerves almost invisible, and the whole of the plant except the upper surface of the leaves is hairy.

Ardisia viminea *Ridl.* n. sp. [Myrsineae]; species *A. marginatae* Bl. affinis, sed foliis et floribus multo minoribus.

Arbuscula glabra 7-metralis, ramis gracilibus vimineis: *foliis* angustis lanceolatis obtusis basibus angustatis, coriaceis punctatis, nervis pluribus ferme invisis, 7 cm. longis, 1·25 cm. latis; petiolis 0·5 mm. longis gracilibus: *cymis* terminalibus glabris paucifloris; *pedunculis* gracilibus rugosis subfurfuraceis 3·2 cm. longis, ramis paucis 5–10 mm. longis; *pedicellis* 2 mm. longis puberulis; *floribus* parvis albis; *sepalis* triangulari-lanceolatis glandulosis praesertim in marginibus; *petalis* ovatis brevibus acutis: *staminibus* antheris

subsessilibus pro flore majusculis: *stylo* breviore: *drupis* parvis globosis.

Selangor. Ulu Gombak; 20 feet tall, flowers white; *Hume* 9676.

The peduncles and pedicels are very rugose and almost scurfy.

Jasminum cordatum *Ridl.* n. sp. [Oleaceae]; affinis *J. subtriplinervi* Bl., differt foliis coriaceis cordatis, sepalis brevioribus, corollae lobis acutis.

Frutex scandens puberula: *foliis* simplicibus oppositis rigide coriaceis ovatis vel lanceolatis acutis, basibus cordatis, costa subtus prominente, nervis 2–4-paribus, 4–7 cm. longis, 2·5 cm. latis; petiolis 3 mm. longis: *floribus* 2 vel pluribus breviter pedicellatis: *pedicellis* 3 mm. longis puberulis; *sepalis* 6 subulatis 2 mm. longis: *corollae* tubo 2·5 cm. longo cylindrico, lobis 7 oblongis acutis, 1 cm. longis, 5 mm. latis, albis: *drupis* binis oblongis (immaturis).

Perak. Gunong Lenoh near Batu Gajah, 350 feet alt., on limestone, also found on the top of a ridge about 1000 feet alt., *G. R. Mills & M. R. Henderson* 15064.

Nearest to *J. subtriplinerve* Bl., of Khasiya and Sylhet, but the leaves are more coriaceous, distinctly cordate, the sepals much shorter and the petals acute; the leaves usually have two conspicuous pairs of nerves from the base and a little above, ascending and inarching within the edge, and some very inconspicuous usually invisible, transverse nerves from the midrib.

Voacanga Havilandii *Ridl.* n. sp. [Apocynaceae]; a *V. grandifolia* Rolfe differt floribus et foliis multo minoribus.

Frutex vel *arbor* parvus glaber: *foliis* lanceolatis vel ovato-lanceolatis acuminatis vel acutis carnosis, basibus angustatis, nervis 11–12-paribus ascendentibus, 9–18 cm. longis, 5·5 cm. latis; petiolis 1–1·5 longis: *paniculis* laxis patentibus pubescentibus 10 cm. longis, 15 cm. latis; *pedunculis* 9 cm. longis, pedicellis 1·5 cm. longis; *calyce* tubuloso obtuso breviter 5-lobo, 7 mm. longo: *corollae* tubo brevi calycem vix superante, annulo incrassato ad orem lobis 5 obovatis, apicibus rotundatis, basibus angustioribus, 2 cm. longis, 1 cm. latis ad apices: *staminibus* 5, antheris in ore sessilibus linearibus, sagittatis acutis: *carpellis* 2; *stylo* ad basin gracili, superne dilato, annulo sub-5-lobo denticulato ad apicem; *stigmate* obconico denticulato, disco annulari sub-5-lobo: *fructibus* non visis.

Borneo. Sarawak, *Beccari* 3601; Kuching, Rock road, *Haviland* 593 (type); Rejang, Sibu, *Haviland* 3047; Kuching, Sungei Sinjan, Siol, hilly districts, 14 feet tall, girth at breast-height 3 feet, bark thin, wood white, fine-grained (Foxworthy's collector 396). Native name: Kayu susu.

Aeschynanthus Flippancei *Ridl.* n. sp. [Cyrtandraceae]; species affinis *A. amoenae* Clarke, sed foliis ovatis tenuibus omnino diversa, corolla brevi pubescente, calyce tubuloso, lobis brevibus.

Herba scandens radicans glabra; *foliis* binis oblongo-ovatis obtusis basibus rotundatis, subcoriaceis, nervis in pagina superiore 4-paribus indistinctis, subtus invisis, 5 cm. longis, 1·5 cm. latis, *petiolis* 8 mm. longis; *floribus* axillaribus, 2–3 in racemo brevissimo crasso 3 mm. longo, *bracteis* per-parvis ovatis; *pedicellis* 5 mm. longis; *calyce* tubuloso, lobis brevibus 5-ovatis acutis, 1 cm. longo, 4 mm. lato, glabro viridi; *corolla* brevi rubra pubescente 2 cm. longa, tubo crassiusculo calycem vix superante, lobis ovatis brevibus; *staminibus* exsertis pubescentibus 2·5 cm. longis, antheris oblongis, *stylo* breviore.

Penang. Balik Pulau, *Flippance*.

This plant judging from a few slender roots emitted from the stems appears to be more or less of a creeping plant, like *Aeschynanthus radicans*. It is remarkable for the short corolla, only twice as long as the tubular calyx, and the flowers few in number borne on a short thick raceme.

Didissandra breviflora *Ridl.* n. sp. [Cyrtandraceae]; species *D. Wrayi* Ridl. affinis, sed haud hirta foliis superne glabris.

Suffrutex, *caule* lignoso 6–10 cm. longo superne dense pallide brunneo-lanuginoso; *foliis* oblanceolatis acutis, basibus cuneatis, marginibus dense serratis, superne glabris, subtus nervis 26-paribus cum costa hirto-lanuginosis, 6–11 cm. longis, 2·5–3 cm. latis; petiolis lanuginosis 2 cm. longis decurrentibus: *pedunculis* gracillimis 7 cm. longis hirtis unifloris: *sepalis* linearibus obtusis 3 mm. longis: *corolla* campanulato-tubulosa glabra pallide coerulea 1 cm. longa, limbo 1 cm. lato, lobis rotundatis: *staminibus* non visis: *pistillo* glabro 7 mm. longo.

Selangor. Ulu Gombak, 500 feet alt., *Hume* 8437.

I have only seen one crushed flower of this plant and am unable to see the stamens. The leaves are decurrent for some way on the petiole. The flower is shorter and more campanulate than in any other species of the genus.

Gymnostachyum hirtum *Ridl.* n. sp. [Acanthaceae]; species *G. affini* Nees proxima, differt ab omnibus specibus in foliis et spica hirtis, sepalisque majoribus.

Herba, *caule* brevi lignoso hirto; *foliis* lanceolatis subacutis basibus cuneatis, marginibus crenulatis hirtis, superne costa excepta glabris, subtus papillosis, costa nervisque 9 ad 11-paribus appresse hirtis; 7–12 cm. longis, 2–4 cm. latis; petiolis 1–2·5 cm. longis hirtis; *spica* 21 cm. longa hirta, basi (8 cm.) nuda; *floribus* circiter 12 sessilibus; *bracteis* lanceolatis acuminatis longe hirtis 1 cm. longis; *sepalis* lanceolatis acuminatis hirtis 1 cm. longis: *corolla* alba, 1·5 longa, pubescente, tubo 3 mm. longo, lobis lanceolatis: *staminibus* non visis: *stylo* filiformi pubescenti: *capsula* oblonga obtusa 8 mm. longa.

Perak. Kali, Kuala Kangsar, *Haniff* 14936. Flowers white.

This is one of the short-stemmed unbranched species, which

differs from all the others in the nerves of the leaf, the sepals and the whole spike being covered with long rough hairs.

Justicia trichodes *Ridl.* n. sp. [Acanthaceae] ; species *J. secundiflorae* Ridl. affinis, sed bracteis lanceolatis vel ovatis latioribus hirtis omnino distincta.

Herba 20–25 cm. alta pubescens; *foliis* herbaceis ovatis vel lanceolatis acuminatis, basibus acutis vel attenuatis acutis, superne glabris, subtus in nervis 6-paribus et costa hirtulis, 8–10 cm. longis, 1 cm. latis; petiolis 2 cm. longis pubescentibus: *spicis* in axillis terminalibus 1 ad 3, 6–6·5 cm. longis; *pedunculis* 0·5–1 mm. longis pubescentibus; *bracteis* pluribus sessilibus imbricantibus, basalibus lanceolatis, superioribus ovatis acutis dense hirtis, basibus breviter angustatis, 8–10 mm. longis, 4 mm. latis: *floribus* flavis, sessilibus: *sepalis* anguste lanceolatis hirtis; *corolla* 1·5 cm. longa, tubo cylindrico basi subglabro superne sparse hirto 7 mm. longo, lobis subaequilongis, labio superiore oblongo-lineari angusto extus hirto, apice breviter obtuse bilobo, labio inferiore aequilongo extus hirto, apice dilatato.

Selangor. Semeniyih, 8 inches high, *Hume* 8165; flowers yellow, 10 inches high, *Hume* 7816 (type).

There is only a single flower on each specimen, and I have therefore been unable to examine it as fully as I should like.

Beilschmiedia longipedicellata *Ridl.* n. sp. [Laurineae]; *B. Scortechinii* Gamble affinis, sed panicula laxa pedicellis longis.

Arbor 10 metralis, ramis juvenibus hirtis; *alabastris* rufo-velutinis: *foliis* coriaceis obovato-oblongis breviter cuspidatis, basibus obtusis superne glabris, subtus costa nervisque circiter 14-paribus hirtis elevatis, 20 cm. longis, 10 cm. latis; *petiolis* 2 cm. longis hirtis: *paniculis* laxis patentibus paucifloris hirtis; *pedunculis* 5–7 cm. longis, ramis 3 cm. longis; *floribus* 3 vel 4 pseudo-umbellatis, *pedicellis* 2 cm. longis; *bracteis* oblongo-linearibus rufo-hirtis: *sepalis* 6 ovatis acutis paullo hirtis 2 mm. longis: *staminibus* serie exteriore 6, filamentis oblongo-linearibus latis, antheris bilocularibus, introrsis glabris; serie secunda 6, filamentis crassis carnosis angustioribus, antheris extrorsis (ut apparet sterilibus); *staminodiis* ovatis sessilibus carinatis glabris: *ovario* hirto ovoideo; *stylo* brevi crasso, stigmate discoideo.

Selangor. Semeniyih, 30 feet high, *Hume*.

This is very distinct from any species known to me in its lax panicle with long-pedicelled flowers, it is also unusually hairy for a *Beilschmiedia*. The flowers are sparsely and shortly hairy outside and somewhat hairy inside.

Buxus malayana *Ridl.* n. sp. [Euphorbiaceae]; species *B. molliculae* W. W. Sm. affinis, sed omnino glabra, capsulis majoribus, stylis longioribus.

Frutex subglabra, ramis angulatis, angulis demum suberosis: *foliis* oppositis rigide coriaceis ovato-lanceolatis obtusis, basibus

cuneatis marginibus incrassatis, nervis 17-paribus, superne vix distinctis, subtus invisis, 3–7 cm. longis, 1–3·3 cm. latis; petiolis 2 mm. longis: *floribus* in capitulis terminalibus 1 cm. latis, congestis; *bracteis* coriaceis lanceolatis, masculis 3 vel 4 basalibus, femineo uno terminali; floribus *masculis*, *sepalis* oblongis coriaceis 3 mm. longis obtusis, *staminibus* 4 e disco parvo, filamentis linearioblongis acuminatis paullo longioribus, antheris dorsifixis curvis; *flore femineo*, *pistillo* conico, stylis 3, stigmatibus recurvis linearibus: *capsulis* ovatis laevibus, 1 cm. latis, stylis 0·5 mm. longis 6.

Perak. Gunong Lanok, near Batu Gajah, 1000 feet alt., on limestone, *G. R. Mills & M. R. Henderson* 15078.

This beautiful Box-bush does not really resemble any known species, but has more of the habit of *B. mollicula* Sm. of Thibet. It is, however, perfectly glabrous and the styles on the capsule much longer. The only other species of box in our area is the quite dissimilar little *B. rupicola* of Lankawi. The genus appears to be quite absent from the Malay Archipelago except for the *B. Rolfei* of the Philippines.

Sauropus elegantissimus *Ridl.* n. sp. [Euphorbiaceae]; *S. concinno* Hemsl. affinis, sed foliis multo minoribus, sepalis haud bilobis apicibus retusis latioribus, planta multo majore.

Arbuscula 5 metralis, glabra, ramis gracilibus, ramulis gracillimis: *foliis* alternis herbaceis ovatis obtusis subtus glaucescentibus basibus rotundatis; nervis 3-paribus, 9 mm. longis, 5 mm. latis; petiolis gracilibus 1 mm. longis; *bracteis* ad bases ramorum coriaceis triangularibus acutis; *stipulis* lanceolatis acuminatis: *floribus* axillaribus flavis 4 mm. latis; *pedicellis* 2 mm. longis; *floribus masculis* non visis; *floribus femineis*, *sepalis* 5 ferme ad basin liberis carnosis oblongis truncatis, apicibus latis subretusis mucronulatis; *ovario* crasso apice plano depresso, subtrilobo; *stylo* crasso, brevi; stigmatibus 3, bifidis, lobis curvis.

Selangor. Ulu Gombak, *Hume* 9366.

Tree 15 feet, flowers yellow.

This very elegant species with its numerous small leaves is nearest *S. concinnus* Hemsl. of Burma, but it is a much bigger plant, the leaves much smaller, and the sepals are retuse with a small mucro.

Galearia lancifolia *Ridl.* n. sp. [Euphorbiaceae]; species *G. Finlaysonii* Wall. affinis, foliis anguste lanceolatis ab omnibus speciebus differt.

Arbor 5 metralis, ramis pubescentibus vel hirtis: *foliis* coriaceis lanceolatis acuminatis, basibus rotundatis glabris superne politis eveniis, subtus nervis 13-paribus elevatis inter se arcuantibus, nervulis et reticulationibus elevatis, 20 cm. longis, 3·5 cm. latis; *petiolis* 3–4 mm. longis hirtis; *spicis* masculis 40 cm. longis gracillimis hirtis; *floribus* minutis albis sessilibus in fasciculis; *bracteis* minutis; *sepalis* lanceolatis hirtis; *petalis* cymbiformibus oblongis, apicibus incurvis glabris; *staminibus* glabris; *spica feminea* cras-

siore 13 cm. longa hirta; *bracteis* lanceolatis subulatis 2 mm. longis; *fructibus* viridibus reniformibus glabris, 7 mm. longis 1·5 cm. latis.

Selangor. Klang Gates, *Hume* 7146: Ulu Gombak at 1500 feet alt., tree to 15 feet tall, flowers white, *Hume* 9931 (type).

This is most nearly allied to *G. Finlaysonii* Wall., but the narrow lanceolate leaves are unique in the genus.

Boehmeria irritans *Ridl.* n. sp. [Urticaceae]; *B. platyphyllae* Don approximata, differt in paniculis racemisque foliis multo brevioribus, glomerulis distantibus, floribus masculis glabris, femineis sessilibus brevioribus et latioribus.

Frutex vel *arbor* 6 m. alta, *caule* superne hirto; *foliis* alternis ovatis acuminatis acutis, basibus rotundatis minute cordatis marginibus crenatis, superne glabris, minute punctatis, subtus pallidis hirtis, nervis subtus elevatis 5 ad 6-paribus, nervulis transversis undulatis, reticulationibus sub lente conspicuis, 11–16 cm. longis, 4–12 cm. latis; *petiolis* 5 cm. longis hirtis: *paniculis* vel *racemis* axillaribus pubescentibus 4–5 cm. longis, glomerulis plurimis, 2–3 mm. latis; *floribus* sessilibus; *bracteis* oblongo-ovatis hirtis, ciliatis; *floribus masculis* 1 mm. longis subglabris; *sepalis* 4 tenuibus oblongis obtusis; *staminibus* 4 filamentis gracilibus; antheris reniformibus; *floribus femineis* perianthio utriculiformi dentibus 4 minutis hirto; *ovario* subtriquetro; *stigmate* singulo crasso cylindrico decurvo; *achenio* ovato triquetro vel fusiformi (in utriculo) pubescente viscido.

Christmas Island, *Andrews* 60; Flying fish cove, Phosphate Hill, *Ridley* 156a (type).

This plant which stings as badly as *Laportea* was originally referred to *B. platyphylla* Don, from which it differs in its urticating hairs and shorter panicles of racemes or simple racemes, the glabrous male flowers and shorter, thicker female flowers. It is often a small tree, 18 feet tall, and has quite a different habit from any form of *B. platyphylla* Don.

Bulbophyllum cheiropetalum *Ridl.* n. sp. [Orchidaceae]; species *B. epicrianthi* Hook. fil. affinis, sed pseudo-bulbis magis dissitis foliis majoribus, petalis quadrifidis, lobis linearibus acutis nec clavatis.

Epiphyta, pseudo-bulbis cylindricis 1 cm. longis et 1–1·5 cm. dissitis, vaginis papyraceis argentatis tectis; *folio* lanceolato acuminato, basi angustato coriaceo 5 cm. longo, 1·5 cm. versus basin lato; *floribus* singulis axillaribus, pedicellis 5 mm. longis; *sepalis* coriaceis ovato-lanceolatis acuminatis punctatis 6 mm. longis, basi gibbosis; *petalis* aurantiacis dimidio brevioribus e basi brevissimo 4-fidis, lobis linearibus acuminatis uno minore; *labello* linguiformi carnoso, obtuso brevi, basi lobis 2 rotundatis tenuibus; *gynostemio* brevi, pede longiore, stelidiis brevibus obtusis; *anthera* oblonga, rostro oblongo truncato; *capsula* elongata angusta 2 cm. longa, pedicello 1 cm. longi.

Kedah Peak, 3000 feet alt., 10th July, 1925, *Flippance*.

This plant belongs to the section *Epicrianthes*, but differs in its much larger size, and the curious 4-fingered petals, linear and acute, three of the fingers being longer than the outer one. The photograph sent shows the sepals spotted and the petals appear from the dried specimen to be yellow or orange.

Saccolabium macrantherum *Ridl.* n. sp. [Orchidaceae]; species in forma antherae malleiformis omnino ab aliis specibus distincta.

Epiphyta, caule 1 cm. longo: *foliis* 3, oblongo-ellipticis obtusis, 7 cm. longis, 3 cm. latis vel minoribus sessilibus: *racemo* gracili 9 cm. longo basi 1·5 cm. nudo; *floribus* per-parvis dissitis albis circiter 36; *bracteis* lanceolatis subulatis 1 mm. longis, *pedicellis* 2 mm. longis: *sepalo* postico lanceolato acuto subcymbiformi curvo 2 mm. longo, lateralibus oblongis apicibus rotundatis; *petalis* oblongis obtusis, angustioribus; *labello* deflexo, 4 mm. longo ad apicem calcaris, lobis lateralibus oblongis erectis subtruncatis brevibus, lobo medio longiore lineari carnoso, callis nullis; *gynostemio* erecto, clinandrio elongato horizontali; *anthera* ovata, apice bilobo, rostro elongato lanceolato acuto; *polliniis* 2 globosis, pedicello longo quam sepalis longiore, apice triangulari tridentata infra elongato angustissimo, disco lineari; *stigmate* angusto inter alis duobus paullo elevatis, callo brevi cylindrico ad basin stigmatis deflexo.

Selangor. Ulu Gombak, 1800 feet alt., flowers white, *Hume*.

I know no *Saccolabium* with so peculiar a column as this; the base is erect and comparatively short, but the clinandrium is prolonged horizontally in both directions, giving a hammer-like form to the whole, the anther cap is large for the flower, bilobed above the pollen-masses, and the pedicel runs the whole length of the prolonged clinandrium and is actually longer than the sepals. It should perhaps be generically separated.

Digitaria virens *Ridl.* n. sp. [Gramineae]; species *D. barbatae* Willd. affinis, sed gluma exteriore multi-costata marginibusque albo-hirtis, planta minore, spiculis minoribus angustioribus, capillis in marginibus brevibus.

Herba caespitosa 20–30 cm. alta: *foliis* glabris linearibus acuminatis 4·5–10 cm. longis, 3 mm. latis, ligula brevi oblongo-lanceolata obtusa, vaginis pilis albis paucis ad bases; *racemis* 2 vel 3 gracilibus 6–7 cm. longis, rachide tenui undulato, anguste alato: *spiculis* lanceolatis acutis 3 mm. longis, vix 1 mm. latis, *gluma* I lanceolata acuta multi-costata (costis ad 12) pallide brunnea, marginibus pilis albis minutis; *gluma* II aequilonga tenui plana acutiore aliter simili; *palea* plana ferme aequilonga: *staminibus* 3, antheris linearibus, utrinque obtusis; *caryopsi* translucente pallido oblongo-elliptico 1·5 mm. longo.

Christmas Island. Flying fish cove, Phosphate Hill to the Waterfall, *Ridley* 97, 154 (type).

I had classed this with *Digitaria commutata*, but Dr. Stapf noted on the specimens that it was an undescribed species, and

indeed it is very distinct in the outer glume of the spikelet being closely ribbed, and in its margins being provided with rather long white hairs, not conspicuous till the fruit is ripe. I noticed at the time I gathered it that the leaves were unusually bright green, hence its specific name. It is certainly allied to *D. barbata* Willd. but the racemes and spikelets are much smaller, and the white hairs on the glume edge scantier and much shorter.

LIX.—THE GENUS ENGLERASTRUM. J. Hutchinson and J. E. Dandy.

A revision of the genus *Englerastrum* was recently carried out by Alston and appeared in *Kew Bull.* 1926: 295. It transpires, however, that a revision was published two years earlier by Th. C. E. Fries in *Notizbl. Bot. Gart. Berl.* 9: 61 (1924). Comparison of the two revisions shows that the conceptions of the genus held by Alston and Fries are decidedly different, and it is therefore necessary to correlate their results.

Alston in his revision deals with *Englerastrum* Briquet, i.e., a genus characterised by the subequal calyx-teeth, connate filaments, and distinctive habit of *E. Schweinfurthii* Briquet. Fries on the other hand enlarges the genus to include several species of *Plectranthus*, and the group of plants revised by him is *Englerastrum* Briquet, emend. Th. C. E. Fries. Alston mentions that *Englerastrum* approaches *Plectranthus* closely, but is distinguished by its connate stamens and peculiar habit. Fries, however, finds that some species of *Plectranthus* have filaments connate at the base, and on that account extends the limits of *Englerastrum* to contain them. These species of *Plectranthus* undoubtedly approach *Englerastrum* very closely; it is therefore difficult to determine where one genus ends and the other begins, and the line of division between them must necessarily be somewhat artificial. It seems better to limit *Englerastrum* to Briquet's original conception by including only those species whose calyx is actinomorphic or almost so, even in fruit. Fries places the two previously known species of *Englerastrum* in a subgenus *Eu-Englerastrum*, characterised by a regular calyx, and founds a second subgenus *Heterodon*, in which the calyx is manifestly zygomorphic, to receive those species of *Plectranthus* which have connate stamens. Most of the latter species differ from *Englerastrum* in habit as well as calyx, and their inclusion tends to destroy the homogeneity of that genus. He apparently overlooked the superior claims of *Coleus scandens* and *C. elongatus* to inclusion in *Englerastrum*. With the exception of one species, *E. diffusum*, which falls into the subgenus *Heterodon*, the genus *Englerastrum* as revised by Alston corresponds with Fries' subgenus *Eu-Englerastrum* and conforms with Briquet's original description of the genus. The species forming the sub-

genus *Heterodon*, including *E. diffusum*, are here transferred to *Plectranthus*.

In Fries' revision, *Englerastrum rhodesicum* N.E.Br. is not mentioned. Examination of the material from Berlin shows that *E. rhodesicum* is conspecific with a number of plants gathered by various collectors in Togoland, Cameroons, Congo, and Tanganyika. All these specimens are named by Fries as *E. djalonense* A. Chev., the type of which was seen by neither Alston nor Fries. The plants, however, fit the description of Chevalier's species, and *E. rhodesicum* is accordingly regarded here as synonymous with *E. djalonense*.

The following key and enumeration of the species are revised in accordance with the views expressed above. Several adjustments in nomenclature are entailed.

Clavis Specierum.

Racemi laxi; folia sessilia vel subsessilia, integra vel crenata, subpersistentia:
- Racemi subsimplices; folia plerumque ovata, margine crenata:
  - Florum verticillastra 1–4 mm. inter se distantia; radix ramosa.....1. *Schweinfurthii*.
  - Florum verticillastra 5–20 mm. inter se distantia; rhizoma subterraneum .....2. *Alstonianum*.
- Racemi ramosi; folia subintegra:
  - Folia ovata vel suborbicularia, apice obtusa .....3. *djalonense*.
  - Folia obovato-lanceolata, apice acuta ...4. *Hutchinsonianum*.

Racemi compressi, unilaterales; folia plerumque longe petiolata, crenata, caducissima (in *E. nigerico* ignota):
- Flores pedicellati; caulis minute puberulus.....5. *nigericum*.
- Flores subsessiles:
  - Caulis minute puberulus; flores pallide purpurei (*Trimen*); folia ovato-triangularia, subacuminata .....6. *elongatum*.
  - Caulis pilosus; flores caerulei (*Guerke*); folia rotundato-ovata, acuta .....7. *scandens*.

1. **Englerastrum Schweinfurthii** *Briquet* (excl. syn. *Coleus dissitiflorus* Guerke).

2. **Englerastrum Alstonianum** *Hutch. et Dandy*, nom. nov.—*E. Schlechteri* (Guerke) Alston, non Th. C. E. Fries.

3. **Englerastrum djalonense** *A. Chev.*—*E. rhodesicum* N.E. Br.

The following are additional records:—Togoland: Sokode-Farm, 350 m., *Schroeder* 66. Cameroons: Mashita, dry savannah, 750 m., *Ledermann* 5349. Belgian Congo: Mukenge, *Pogge* 1228, 1250. Rhodesia: near Mumbwa, *Macaulay* 637; Livingstone, in sand, 1000 m., *Rogers* 7205. Tanganyika: Kyimbila, Bundali, *Stolz* 1291.

4. **Englerastrum Hutchinsonianum** *Alston*.

5. **Englerastrum nigericum** *Alston*.

6. **Englerastrum elongatum** (*Trim.*) *Alston.*

7. **Englerastrum scandens** (*Guerke*) *Alston.*

Species Exclusae.

Englerastrum adenophorum (Guerke) Th. C. E. Fries = **Plectranthus adenophorus** *Guerke.*

Englerastrum conglomeratum Th. C. E. Fries = **Plectranthus conglomeratus** *Th. C. E. Fries*, mss., comb. nov.

Englerastrum diffusum Alston = **Plectranthus tenuis** *Hutch. et Dandy*, nom nov.*

Englerastrum floribundum (N.E. Br.) Th. C. E. Fries = **Plectranthus floribundus** *N.E. Br.*

Englerastrum gracillimum Th. C. E. Fries = **Plectranthus gracillimus** *Th. C. E. Fries*, mss., comb. nov.

Englerastrum Hjalmarii Th. C. E. Fries = **Plectranthus Hjalmarii** (*Th. C. E. Fries*) *Hutch. et Dandy*, comb. nov.

Englerastrum Kassneri Th. C. E. Fries = **Plectranthus Kassneri** (*Th. C. E. Fries*) *Hutch. et Dandy*, comb. nov.

Englerastrum melanocarpum (Guerke) Th. C. E. Fries = **Plectranthus melanocarpus** *Guerke.*

Englerastrum modestum (Baker) Th. C. E. Fries = **Plectranthus modestus** *Baker.*

Englerastrum Schlechteri Th. C. E. Fries = **Plectranthus Schlechteri** (*Th. C. E. Fries*) *Hutch. et Dandy*, comb. nov.

Englerastrum tetragonum (Guerke) Th. C. E. Fries = **Plectranthus tetragonus** *Guerke.*

LX.—ADDITIONS TO THE INDEX KEWENSIS: IX†

1. Crantz, Classis Umbelliferarum Emendata (1767).

In Kew Bulletin 1925, p. 186, a list was given of fifty names published in Crantz, Classis Cruciformium (1769), but hitherto omitted from the Index Kewensis. During the preparation of Supplement VII. it has been discovered that numerous names published in another work by the same author, namely, Crantz, Classis Umbelliferarum Emendata (1767) had also been omitted from the Index Kewensis. As in his work on Cruciferae, Crantz gave no indication of the authors of the species or whether a name was proposed for the first time in this work. It was, therefore, found necessary to check all the names, 217 in number, with the Index Kewensis and its Supplements. Of these, twenty names are either omitted from the Index Kewensis altogether or are

* The name *Plectranthus diffusus* has already been used by Merrill for a Philippine species.

† Continued from *Kew Bull.* 1926, p. 214.

ascribed to later authors. The Linnean equivalents were not cited by Crantz, and have therefore been determined by comparing the pre-Linnean synonyms cited by both Crantz and Linnaeus. Three of these names are kept up by modern authors, namely, *Caucalis nodosa*, *Chaerophyllum Anthriscus*, and *Laserpitium Halleri*. These were attributed in the Index to Scopoli, Lamarck and Allioni respectively. Of the remaining seventeen, five are nomina abortiva, namely:—*Apium ammi-maius*, *Apium Ammios*, *Apium Tragoselinum*, *Libanotis galbanifera*, *Smyrnium hispidum*.

The following list gives the twenty names in alphabetical order, each name being followed by the page of Class. Umbell. Emend. and its synonym:—

Apium
- ammi-maius 103 : Ammi maius
- Ammios 103 : Sison Ammi
- Tragoselinum 100 : Pimpinella Saxifraga

Caucalis
- Carota 113 : Daucus Carota
- nodosa 112 : Tordylium nodosum

Chaerophyllum
- Anthriscus 76 : Scandix Anthriscus
- canadense 79 : Sison canadense

Cicuta
- graeca 97 : Sium graecum
- Monnieri 98 : Selinum Monnieri

Laserpitium
- Halleri 67 : L. Halleri All. (1785)

Libanotis
- condensata 106 : Athamanta condensata
- galbanifera 107 : Bubon Galbanum
- sicula 106 : Athamanta sicula

Ligusticum
- chinense 81 : Athamanta chinensis
- Foeniculum 82 : Anethum Foeniculum

Selinum
- alpestre 60 : Peucedanum alpestre
- nodosum 61 : Peucedanum nodosum
- Silaus 61 : Peucedanum Silaus

Smyrnium
- hispidum 73 : Cachrys sicula
- Libanotis 72 : Cachrys Libanotis

2. An overlooked generic name.

Coutinia illustris, a new genus and species of the *Contortae* from Brazil, proposed by Velloso in a little-known work entitled Quinografia Portugueza (1799), seems to have been entirely overlooked by botanists. The description (pp. 166-170) is accompanied by two plates. Both description and plates leave no room for doubt that *Coutinia* belongs to the *Apocynaceae*. The fruit and seed are evidently those of an *Aspidosperma*. The flowering branch, however, is unlike any *Aspidosperma* hitherto discovered and is probably a *Plumeria*, the few flowered inflorescence, the two large bracteoles and the large flowers being characteristic of the

latter genus. Whether *Coutinia* is a mixture of two genera or not, it cannot replace either *Plumeria*, which dates from 1753, or *Aspidosperma* (1824), as the latter name is conserved under Art. 20 of the International Rules.

M. L. G.

LXI.—A NEW VARIETY OF ANDROSACE MAXIMA.

B. Gilliat-Smith.

A. maxima *L.* var. **flavida** *Gilliat-Smith* var. nov.; omnibus partibus tenuior, et floribus minoribus flavidis ab speciei varietate vulgare recedit. Corollae color *Primulae acaulidis* formae flavidae colori similis.

Persia. Tabriz, *Gilliat-Smith* 1326 (standard), 1359, (Herb. Kew.).

On the arid hills south of Tabriz, where it is always smaller than even the dwarf forms of the common variety of the species. It flowers from the latter half of March in sheltered places on the plain, and a fortnight later up in the hills. On the whole it appears earlier, and is more abundant, than the standard variety of the species, and continues flowering with the latter throughout April and the greater part of May. It fruits in May and June, the fruit being scarcely ripe before July.

LXII.—MISCELLANEOUS NOTES.

Mr. F. N. Howes, M.Sc., F.L.S., Economic Botanist, Agricultural Department, Gold Coast, has been appointed by the Minister of Agriculture and Fisheries to be an Assistant (Museums) in the Royal Botanic Gardens, Kew (*K.B.* 1925, p. 94.).

Mr. W. Nowell, D.I.C., F.L.S., Director, Department of Science and Agriculture, British Guiana, has been appointed by the Secretary of State for the Colonies, Director of the Amani Institute, Tanganyika Territory (*K.B.* 1913, p. 359; 1920, p. 218; 1926, p. 368).

The following appointments have been notified by the Secretary of State for the Colonies:—Mr. F. L. Squibbs to be Assistant Curator, Botanical Department, Dominica: Mr. T. D. Maitland, M.B.E., Botanist, Agricultural Department, Uganda, to be Superintendent, Botanic Gardens, Victoria, British Cameroons (*K.B.* 1910, p. 64; 1913, p. 125; 1921, p. 171): Captain H. G. Poynter, to be a Superintendent of Agriculture, Nigeria.

Dominica.—On the 22nd of July last a severe storm occurred over the island of Dominica. In a letter recently received, Mr. Harcourt, the Curator and Agricultural Superintendent, states that considerable damage was caused to the ornamental section of the Botanic Garden; five trees were completely destroyed and thirty-seven others sustained injury by being blown about so as to loosen their hold in the ground or by the loss of large limbs. In the economic nurseries and experiment plantations the damage was more serious. The whole shelter protecting the nursery collapsed and hundreds of young economic plants, ready for distribution to peasant proprietors, were destroyed. It will be several months before these stocks can be replenished. In the Lime Experiment Station many full-bearing lime trees were totally destroyed, a large quantity of the fruit was washed into the sea and even young fruits no larger than a pea were stripped from the trees. A serious gap has thus resulted in the continuity of the experimental work which has been in progress for a number of years. The result of the work carried out during the past year on the breeding of lime-trees with the object of obtaining a strain immune to the wither-tip disease was ruined, only one fruit set by the crosses surviving the storm. The Cacao trees, which were in full flower at the time, were stripped of their blossoms, the crop was entirely lost and many trees destroyed. Fruit trees generally were damaged and a large quantity of immature fruit destroyed.

The Study of Vegetation.*—This publication is by the British Empire Vegetation Committee, which was appointed by the Imperial Botanical Conference held in London in 1924. It is divided into three parts, General, Regional, and Types of Vegetation. The first deals essentially with ecological methods, terminology, the physico-chemical investigation of the habitat, biotic factors, and special groups of plants. The second part consists of five papers, by as many authors, dealing with vegetation study in various parts of the Empire. The last part is composed of eight papers, each complete in itself, by specialists on vegetational types characteristic of the different Dominions and India.

The methods of study of the main groups of factors which mould vegetation are mostly summarized in a concise manner which is, however, sufficiently detailed for students with a general scientific training to be able to work the processes in the field without the aid of other guides.

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* Aims and Methods in the Study of Vegetation, edited by A. G. Tansley and T. F. Chipp. The British Empire Vegetation Committee and the Crown Agents for the Colonies, 4, Millbank, Westminster, S.W. 1., 1926. Demy 8vo, pp. xvi + 384 with 62 figs. and plates. Price 12s. 6d.

The accounts of concrete study of various regions and types of vegetation from an ecological standpoint are naturally very varied. They certainly suffice to indicate the wide scope of the science, the material available for many workers, and the variety of methods and basic schemes which may be used.

This book, which is extraordinary good value for the price, should be in the hands of every student of vegetation in the British Empire. Beginners will find it the best introduction to the study of plant ecology yet published and even professional ecologists will find it useful.

Cotton and its Production.*—This book by Mr. W. H. Johnson bears an Introduction by Sir Wyndham R. Dunstan (late Director of the Imperial Institute), and also a Foreword by Sir William Himbury (Managing Director of the British Cotton Growing Association), both eminent authorities on the subject, while the author himself brings to bear on his work an experience befitting the importance of the task. The scope of the book is stated in the Introduction: "Mr. Johnson explains the present position and prospects of cotton cultivation in every country in which there is any chance of success, and his book furnishes the most complete guide and encyclopaedia which has yet appeared."

The first two chapters deal with the History and Botany of the Cotton plant. Then follow chapters on production in the six largest Cotton producing countries of the world—the United States, India, Egypt, Brazil, China and Russia. Evidence is given of the great efforts being made to increase production in other parts of the British Empire, namely Africa, Malaya, the West Indies, Australia, Ceylon, Iraq, etc. All branches of the industry are treated in detail and maps are included showing the areas of production. Cultivation, manufacture, diseases, insect pests and by-products are dealt with on a comprehensive scale, and an extensive bibliography and index conclude the work.

J. H. H.

Gum Arabic.†—The recent publication of a work entirely devoted to Gum Arabic or Gum Senegal (*Acacia Senegal* Willd.; *A. Verek* Guill. & Perr.) establishes the importance of the main trade product of an extensive tract of the Sudan region.

The Kordofan Province, from which comes about two-thirds of the gum exported from the Sudan, covers some 119,000 sq.

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* By W. H. Johnson, pp. xxvii+536, 26 maps. Macmillan & Co., Ltd., London, 1926. Price 30s.

† Gum Arabic; with special reference to its Production in the Sudan, by H. S. Blunt; pp. 47, map, ill. 50. Oxford University Press. London; Humphrey Milford. 1926. Price 10s. 6d. net.

miles, and the trade involves a circulation amongst the Arabs of £E.500,000 to 750,000 annually in the four gum-markets of El Obeid, Nahud, Um Ruaba and Rahad. Throughout this Province the Forestry staff exercise control, distributing seed, encouraging the cultivation, preventing illicit cutting down of the trees, keeping down fires and supervising the markets. The best gum areas are reported to be in comparatively waterless regions, and only high prices for the gum will induce the Arabs to go so far afield to collect it; they prefer to confine their attention to gum-gardens near the villages and a market. Water is the principal problem in the gum region and the chief supplies are obtained by means of (1) wells, usually 60 to 100 feet deep, (2) "Tebeldi" (Baobab Tree—*Adansonia digitata*) storage, (3) the cultivation of water-melons (*Citrullus vulgaris*), which are invaluable when men are out tapping distant areas. The Tebeldi trees, which are sometimes 40 ft. in circumference, are naturally or artificially hollowed out to hold about 70 burma (a pottery receptacle holding about 3½ gallons), or approximately 250 gallons of water. There are some 33,000 of these trees used for holding water, and each tree has a name and is carefully guarded by its owner. The gum trees are found to be best grown from seed, which is produced only about once in five years, and the production of gum from each tree is estimated to lie between the fourth and eighteenth years.

The illustrations—50 in all—are an important feature of the book, which in general deals with History of the Trade, the Kordofan Province, Exploitation, Markets, Forest Policy, and Chemical Properties and Uses of the Gum.

It may be mentioned that there is a specimen of the tree with a tapping axe, also a good series of the gum, in the Museum collection at Kew.

J. H. H.

The Cultivation of Citrus Fruits*.—The title of this book scarcely describes the scope or importance of the work. The author has taken considerable trouble with the botany concerning the different cultivated forms of *Citrus* and has grouped the numerous varieties in well defined sections. Whilst his general remarks upon the family apply more particularly to cultivation in Florida and California, there is a considerable amount of information that will be found useful to growers in other countries. In the first chapter on the commercial importance of *Citrus* fruits, the author gives tables showing the total crop despatched by railroad transport over the period 1886–87 when Florida sent away 1,260,000 boxes

* The Cultivation of Citrus Fruits, by H. Harold Hume. Published by Macmillan & Co., Ltd., St. Martin's Street, London, and New York, as one of their Rural Science Series under the Editorship of Mr. L. H. Bailey. 1926. Pp. xxi + 561. Price 21s. net.

of fruit, and California 840,560 boxes, up to the period 1923–24, when Florida disposed of 20,399,614 boxes and California despatched 24,292,800 boxes of fruit. Tables are also given of the acreage of the various forms of *Citrus* cultivated in Florida and California in 1923. Three genera receive special attention in the book; *Poncirus*, represented by *P. trifoliata* Raf. better known in European gardens as *Aegle sepiaria* DC., or *Citrus trifoliata* L.; *Fortunella* the Kumquat, represented by three species; and *Citrus*, the most important genus which includes *C. Limonia* Osbeck, the Lemon; *C. aurantifolia* Swingle, the Lime; *C. maxima* Merrill, the Shaddock or Pummelo; *C. paradisi* Macf., the Pomelo or Grapefruit; *C. Aurantium* L., the Sour, Bigarade, or Seville Orange; *C. sinensis* Osbeck, the Sweet Orange; *C. nobilis* Lour., the King Orange; *C. nobilis* var. *deliciosa* Swingle, the Mandarin Orange or Tangerine Orange; *C. nobilis* var. *Unshiu* Swingle, the Satsuma Orange, *C. mitis* Blanco, the Calamondin; and *C. ichangensis* Swingle, from China. Following generic descriptions, chapters are devoted to each of the principal groups, thus in Chapter V, dealing with the Sweet Orange, fifty-one varieties are described under the sub-heads, Spanish Oranges, Mediterranean Oranges, Blood Oranges, and Navel Oranges. In a chapter on the Pomelos and Shaddocks, seventeen varieties of Grapefruit are described. Chapters are devoted to Breeding New Varieties, Propagation, Soils for Citrus Groves, Planting, Cultivation, Cover Crops, Fertilizers, Irrigation, Climate, Pruning, Gathering and Packing Fruit, Pests and other subjects. Illustrations, comprising 237 excellent drawings and photographs, form an important feature of the work; there is a good index, and the book is well produced with clear type.

W. D.

Florae Siamensis Enumeratio.*—The second part of this useful compilation, comprising the Bentham and Hooker families from *Linaceae* to *Anacardiaceae*, has now been published. It is expected that one more part will complete Vol. I. and accommodate the remaining families of the Polypetalae.

* A list of Plants known from Siam with Records of their occurrence, by W. G. Craib. Published for the Siam Society by the Bangkok Times Press. Luzac & Co., London, 1926, pp. 199–358. Part 2. Price 12s. 10d.

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